Dialogic®

Dialogic® DSI Signaling Servers

SS7G41 Hardware Manual

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Contents

1 Warnings, Cautions and Safety Information 7
1.1 Chapter Overview 7
1.2 Warnings, Cautions and Safety Information: English 7
1.3 Avertissements: Français 15
1.4 Warnung: Deutsch 18
1.5 Avvertenza: Italiano 21
1.6 Advertencia: Español 23
2 Introduction 27
2.1 Chapter Overview 27
2.2 About this Publication 27
2.3 Related Information 27
2.3.1 Software Manuals 27
2.3.2 Signaling Board Documentation 28
2.4 Product Overview 28
2.4.1 Introduction 28
2.4.2 Overview 28
2.5 Dialogic® DSI SS7G41 Signaling Server Product Variants 29
2.6 Software Licenses 29
2.7 Regulatory Specifications and Declarations 29
2.8 Hardware Warranty Information 30
3 Features of the Dialogic® DSI SS7G41 Signaling Server 31
3.1 Chapter Overview 31
3.2 Physical Specifications 32
3.3 Environmental Specifications 33
3.4 Product Reliability 34
3.5 Main Features 34
3.5.1 Overview 34
3.5.2 Server Components 35
3.5.3 Front Panel 36
3.5.4 Rear Panel 36
3.6 Controls and Indicators 38
3.6.1 Main Switches and LEDs 38
3.6.2 Ethernet Port LEDs 39
3.7 Signaling Boards 40
3.8 Power Inputs 40
3.8.1 AC Power Input 41
3.8.2 DC Power Input 42
3.9 PCM Interface Ports 44
3.10 Signaling Links 45
3.11 Ethernet Interfaces 46
3.12 Serial Port (COM1) 47
3.13 Universal Serial Bus (USB) Interface 49
4 Working with the Dialogic® DSI SS7G41 Signaling Server 51
4.1 Overview 51
4.2 Guidelines for Installation 51
4.3 Removing and Installing the Front Bezel 52
4.3.1 Removing the Front Bezel 52
4.3.2 Re-Installing the Front Bezel 53
4.4 Removing and Installing the Chassis Cover 53
4.4.1 Removing the Chassis Cover 53
4.4.2 Installing the Chassis Cover 54
4.5 Removing the Processor Air Duct 56
4.6 Re-installing the Processor Air Duct 57

4.7 Grounding a DC-Powered System 58
4.8 Replacing a Power Supply 59
4.8.1 Removing the Power Supply 60
4.8.2 Installing the Power Supply 61
4.9 Removing and Installing a Hard Disk Drive (HDD) 62
4.9.1 Removing the Hard Disk Drive 62
4.9.2 Installing the New Hard Disk Drive 62
4.10 Preparing Dialogic® DSI SS7 Network Interface Boards for Installation 63
4.10.1 Preparing Dialogic® DSI SS7LDH4 Network Interface Boards for Installation 63
4.10.2 Preparing Dialogic® DSI SS7MDL4 Network Interface Boards for Installation 65
4.10.3 Installing or Replacing a Dialogic® DSI SS7 Network Interface Board 66
4.11 Replacing a PCIe Board 66
4.11.1 Removing PCI Support Brackets and PCI Filler Plates 66
4.11.2 Installing the PCIe Board(s) into the Chassis 67
4.11.3 Reinstalling and Adjusting the PCI Support Bracket 70
4.12 Back-up Battery - Replacement 72
4.12.1 Replacing the Back-up Battery 73

Revision History

Date	Issue No.	Description
December 2013	4	Update to SS7LD PCM Port diagram Addition of part information for Rack Mount Kit 28"-35.5
February 2013	3	Addition of operating humidity data in Table 2 Addition of MTBF data for DSI SS7G41 accessories in Table 3
January 2012	2	Addition of MTBF data in Table 3
September 2011	1	General Availability

1 Warnings, Cautions and Safety Information

1.1 Chapter Overview

This chapter contains the following warnings, cautions and safety information for the Dialogic® DSI SS7G41 Signaling Servers:

- "Warnings, Cautions and Safety Information: English" on page 7
- "Avertissements: Français" on page 15
- "Warnung: Deutsch" on page 18
- "Avvertenza: Italiano" on page 21
- "Advertencia: Español" on page 23

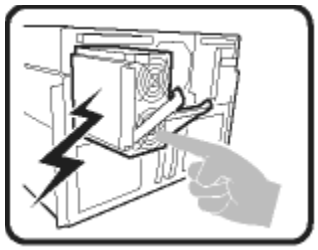
1.2 Warnings, Cautions and Safety Information: English

Read all caution and safety statements in this document before performing any of the instructions.

Note: Singular references (for example, "server" or "product" or "device"), below, refer to the Dialogic® DSI SS7G41 Signaling Server.

Warning: Adherence to Safety and Assembly Instructions

Before working with your server product pay close attention to these safety instructions. You must adhere to the assembly instructions in this manual for compliance with existing product certifications and approvals.



Warning: Hazardous Conditions, Power Supply

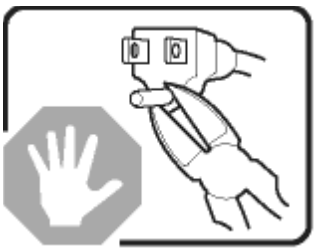
Hazardous voltage, current, and energy levels are present inside the power supply.

The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.

Warning: Power Button

The power button on the system does not turn off all system power. To remove all power from the system, you must unplug/ disconnect the power cord(s) from the system.

Unplugging or disconnecting the power cords from the product removes the +12 Volt standby power that is present when the product is powered down (standby).



If AC Power Supplies are Installed

Warning: AC Power Cord

Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product might be equipped with more than one AC power cord.

You must use power cords that meet the following criteria:

- Rating: For U.S./Canada cords must be UL Listed/CSA Certified type SJT, 18-3 AWG. For outside U.S./Canada cords must be flexible harmonized (<HAR>) or VDE certified cord with 3 x 0.75mm conductors rated 250 VAC.
- Connector, wall outlet end: Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be rated 125% of overall current rating of the product.
- Connector, product end: The connectors that plug into the AC receptacle on this product must be an IEC 320, sheet C13, type female connector.
- Cord length: Cords must be less than 4.5 meters (14.76 feet) long.

Warning: Mains AC Power Disconnect

The AC power cord(s) is considered the mains disconnect for the product and must be readily accessible when installed. If the individual product power cord(s) will not be readily accessible for disconnection then you are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack unit, not just to this product. To remove all power, all AC cords must be removed from the product.

Warning: Grounding the Rack Installation

To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the product power cord(s) is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the product power cord(s) is plugged into a wall AC outlet, the safety ground conductor in the power cord(s) provides proper grounding only for this product. You must provide additional, proper grounding for the rack and other devices installed in it.

Warning: Overcurrent Protection

The product is designed for an AC line voltage source with up to 20 Amps of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 Amps of protection, you must provide supplemental protection for the product. The overall current rating of the product configured with two power supplies is less than 6 Amps.

If DC Power Supplies are Installed

Warning: Isolation

The product with DC input is to be installed in a Restricted Access Location in accordance with articles 110-16, 110-17, 110-18, 110-26 and 110-271 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC or DC source. The DC source must be capable of providing up to 300 W of continuous power per feed pair.

Connection to a DC source should only be performed by a **QUALIFIED SERVICE TECHNICIAN**.

Warning: Main DC Power Disconnect

You are responsible for installing a properly rated DC power disconnect for the server. This DC power disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack unit, not just to this product. The UL-listed circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible, and should be rated at no more than 10 Amps.

Warning: Grounding the Server

These servers are intended for installation with an isolated DC return (DC-I) and are to be installed in a Common Bonding Network (CBN).

To avoid the potential for an electrical shock hazard, you must reliably connect a safety ground conductor to the product. The safety ground conductor must be a minimum 14 AWG connected to the safety ground studs on the rear of the product

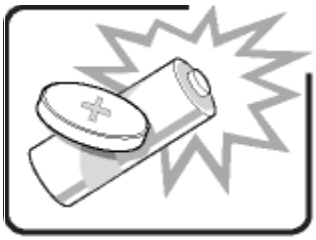
The safety ground conductor should be connected to the chassis stud with a Listed closed two-hole crimp terminal having 5/8-inch pitch. The nuts on the chassis earth ground studs should be installed with a 10 in-lbs of torque.

The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Warning: Overcurrent Protection

Overcurrent protection UL-listed circuit breakers must be provided as part of each host equipment rack and must be installed between the DC source and this product. The branch circuit protection shall be rated minimum 75 VDC, 10 Amps maximum per feed pair. If the DC power system for the equipment rack is installed with more than 10 Amps of protection, you must provide supplemental protection for this product. The overall current rating of this product configured with two power supplies is:

- Less than 7 Amps for the Dialogic® DSI SS7G41 Signaling Server.



Warning: Danger of Explosion if Battery Replaced Incorrectly

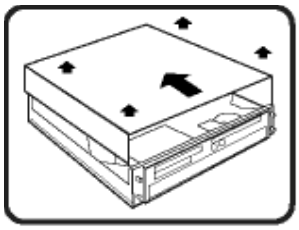
Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

Warning: Removing the Top Cover

To avoid injury from electrical and mechanical hazards, chassis covers should only be removed by qualified service personnel.

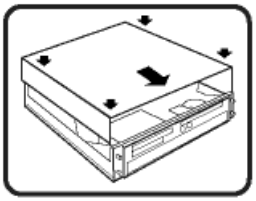
SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the system, follow these steps:

1. Turn off all peripheral devices connected to the system.
2. Turn off the system by pressing the Power button.
3. Label and disconnect all telecommunication cables and all other cables connected to connectors or ports on the back of the system.
4. Unplug/disconnect the power cord(s) from the system.
5. Provide some electrostatic discharge (ESD) protection by wearing an anti-static wrist strap attached to chassis ground of the system—any unpainted metal surface—when handling components.
6. Do not operate the system with the chassis covers removed.



After you have completed the five SAFETY steps above, you can remove the system covers. To do this:

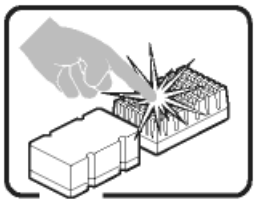
1. Remove and save the shipping screw, which retains the top cover.
2. Remove the covers.



For proper cooling and airflow, always reinstall the chassis covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

1. Check first to make sure you have not left loose tools or parts inside the system.
2. Check that cables, add-in boards, and other components are properly installed.
3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
4. Connect all external cables and the power cord to the system.

Warning: Hazardous Conditions and Parts



A microprocessor and heat sink might be hot if the system has been running. Also, there might be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.

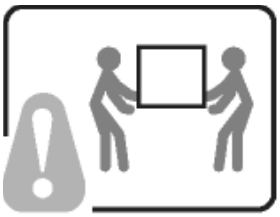
Warning: Hazardous Conditions, Devices and Cables

Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the product and unplug or disconnect power cords, telecommunications systems, networks, and modems attached to the product before removing the Top Cover. Otherwise, personal injury or equipment damage can result.

Warning: Hazardous Conditions, Processors and Power Supplies

Thermal conditions may be present in the processor or memory complex. Allow all fans to continue to run until they shut down on their own after power has been turned off. After the fans stop rotating, you can unplug or disconnect the power cords.

Warning: Heavy Equipment



Servers can be too heavy for a single person to lift or move safely. Depending on the server, use two people or a mechanical assist to lift or move the server.

Warning: Anchor the Equipment Rack

The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more products are extended in front of the rack on slides. You must also consider the weight of any other device installed in the rack. A crush hazard exists should the rack tilt forward which could cause serious injury.

Only use a screwdriver tip to push in lock tabs on rack slides. A pinch hazard exists if fingers are used for this purpose. The equipment rack must be installed according to the manufacturer's instructions.

Warning: Not intended for Direct Connection to Outside Plant

The telecommunication interfaces of this product are not intended for direct connection to "outside plant" signal conductors (metallic). The product shall be isolated, by channel banks or office repeaters, from any connections to network or terminal equipment, that lie outside of the same building. The telecommunication interface connections are considered to be, and meet the requirements of, SELV circuits (not TNV). Refer also to any region specific regulatory requirements of network connection in the *Dialogic® DSI SS7G41 Signaling Servers Regulatory Notices.*

Note: For some geographic regions, and subject to limitations, the T1/E1 ports of Dialogic® DSI SS7MDL4 Network Interface Boards in Dialogic® DSI SS7G41 product may be connected to "outside plant" signal conductors, and therefore become TNV-1 circuits. See *Dialogic DSI SS7G41 Signaling Servers Regulatory Notice.*

Warning: Maintaining Your Product's UL Listing

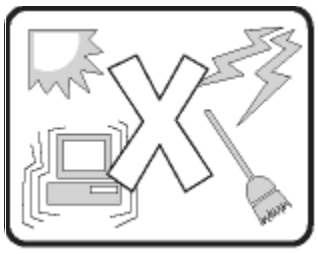
To maintain the UL listing and compliance to other regulatory certifications and/or declarations, use only the described, regulated components specified in this manual. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold. In addition, the following conditions must be adhered to and the following regulated components must be used. Interchanging or using other components will void the UL listing and other product certifications and approvals.

- Add-in boards must have a printed wiring board flammability rating of minimum UL94V-1. Add-in boards containing external power connectors and/or lithium batteries must be UL recognized or UL listed. Any add-in board containing modem telecommunication circuitry must be UL listed. In addition, the modem must have the appropriate telecommunications, safety, and EMC approvals for the region in which it is sold.
- Peripheral Storage Devices must be a UL recognized or UL listed accessory and TUV or VDE licensed. Maximum power rating of any one device is 19 watts. Total server configuration is not to exceed the maximum loading conditions of the power supply.

Caution: Alarms Connector

Do not apply more than 60 Volts (maximum) to any pin or combination of pins on the Alarms connector.

Caution: System Designed to Operate in Office Environment



The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- Protected when in regions that are susceptible to electrical storms. We recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cords, because they serve as the product's mains power disconnect.

Caution: Cooling and Air Flow

For proper cooling and airflow, always install the top cover before turning on the product. Operating the product without the Top Cover in place can damage product components.

Caution: Anti-Static Handling Procedures

The product contains Electrostatic Sensitive Devices (ESDs), which may be permanently damaged if incorrectly handled. If modules are removed from the chassis they must be handled in accordance with appropriate anti-static handling procedures. Refer to IEC61340-5-1 Electrostatics - Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements for further details. If you are not familiar with ESD precautions, visit http://www.dialogic.com/support/hwinstall/ and click on the appropriate link to learn more.

Caution: Electrostatic Discharge (ESD) and ESD Protection

ESD can damage Hard Disk Drives (HDDs), boards, and other parts. We recommend that you do all procedures in this manual only at an ESD-protected workstation. If one is not available, provide some ESD protection by wearing an anti-static wrist strap attached to chassis ground (any unpainted metal surface) on your product when handling parts.

Caution: ESD and Board Handling

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the product, place it on a grounded surface free of static electricity. Do not slide boards over any surface.

Caution: Temperature

Operating temperature

The temperature in which:

- The Dialogic® DSI SS7G41 Signaling Server operates when installed in an equipment rack must not go below 5°C (41°F) or rise above 40°C (104°F). Extreme fluctuations in temperature can cause a variety of problems in your product.

Non-operating temperature

The temperature in which:

- The Dialogic® DSI SS7G41 Signaling Server must be kept when not operational must not go below -40°C (-40 °F) or rise above 70 °C (158 °F).

Caution: Ventilation

The equipment rack must provide sufficient airflow to the front of the product to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of:

- 580 BTUs (352 Watts) per hour for the Dialogic® DSI SS7G41 Signaling Server.

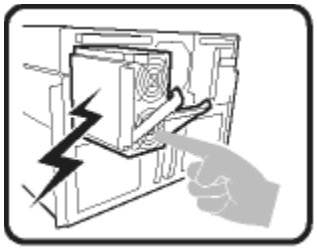
The rack selected and the ventilation provided must be suitable to the environment in which the product will be used.

DISCLAIMER: Emissions

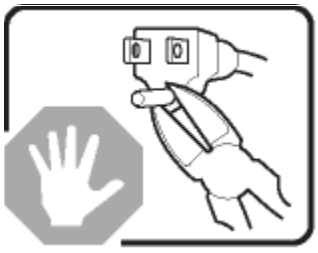
For EMC (Electromagnetic Compatibility) compliance with your local regional rules and regulations, the final configuration of your end system product may require additional EMC compliance testing. For more information, please contact your local Dialogic Representative.

Refer to the *Dialogic® DSI SS7G41 Signaling Servers Regulatory Notices* for product Safety and EMC regulatory compliance information. This is an FCC (Federal Communications Commission) Class A device.

1.3 Avertissements: Français



Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plusieurs blocs d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.



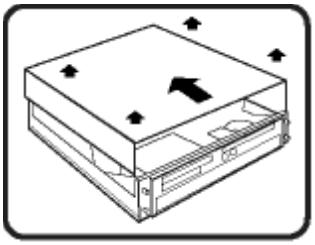
Ne pas essayer d'utiliser ni de modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Un produit peut être équipé de plus d'un câble d'alimentation CA.

Le bouton d'alimentation du système n'éteint pas toutes les alimentations CA du système. Pour mettre complètement le système hors tension, vous devez débrancher chaque cordon d'alimentation CA de sa prise.

Pour éviter toute lésion à la suite de risques électriques et mécaniques, les panneaux du châssis ne doivent être démontés que par un personnel qualifié.

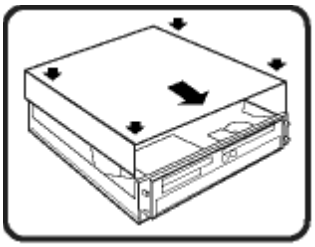
CONSIGNES DE SÉCURITÉ : Lorsque vous retirez les panneaux du châssis pour accéder à l'intérieur du système, suivez les étapes ci-dessous:

1. Mettez hors tension tous les périphériques connectés au système.
2. Mettez hors tension le système en appuyant sur le bouton d'alimentation.
3. Débranchez tous les cordons d'alimentation CA du système ou des prises murales.
4. Identifiez et déconnectez tous les câbles de télécommunications et tous les autres câbles reliés aux connecteurs E/S ou aux ports derrière le système.
5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier).
6. Ne faites pas fonctionner le système si les panneaux du châssis sont enlevés.



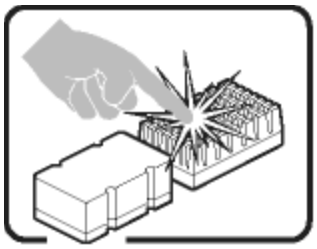
Après avoir suivi les six consignes de SECURITE ci-dessus, vous pouvez retirer les panneaux du système. Pour effectuer cette opération:

1. Retirez et conservez toutes les vis des panneaux.
2. Retirez les panneaux.

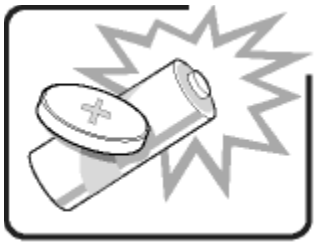


Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du châssis avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit:

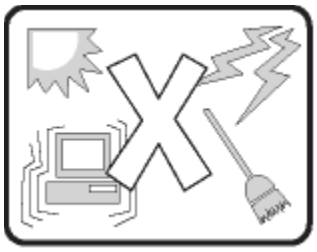
1. Assurez-vous ne pas avoir oublié d'outils ou de pièces démontées dans le système.
2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés.
3. Revissez solidement les panneaux du châssis avec les vis retirées plus tôt.
4. Rebranchez tous les cordons d'alimentation CA et câbles externes au système.



Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Les contacts doivent être établis avec soin. L'usage de gants de protection est conseillé.

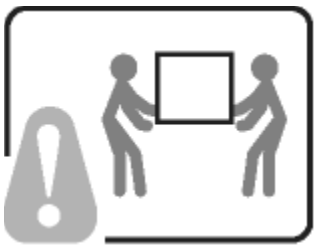


Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement par une pile du même type ou de type équivalent recommandé par le fabricant. Débarrassez-vous des piles usagées conformément aux instructions du fabricant.



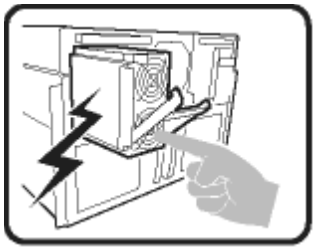
Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- Propre et dépourvu de poussières en suspension (sauf la poussière normale).
- Bien aéré et loin des sources de chaleur, y compris du soleil direct.
- À l'abri des chocs et des sources de vibration.
- Isolé des forts champs électromagnétiques générés par des appareils électriques.
- Protégé s'il se trouve dans des régions sujettes aux orages magnétiques. Nous vous recommandons de connecter votre système à un suppresseur de surtension et de déconnecter les lignes de télécommunications de votre modem pendant un orage magnétique.
- Muni d'une prise murale correctement mise à la terre.
- Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).

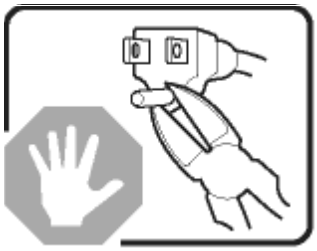


Il se peut que les serveurs soient trop lourds pour qu'une seule personne puisse les soulever et les déplacer en toute sécurité. En fonction du serveur, utilisez deux personnes ou utilisez un équipement mécanique auxiliaire pour soulever ou déplacer le serveur.

1.4 Warnung: Deutsch



Das Netzteil dieses Computers enthält keine wartungsbedürftigen Teile. Dieses Produkt kann über mehrere Netzteile verfügen. Überlassen Sie Wartungsarbeiten nur qualifizierten Fachleuten.



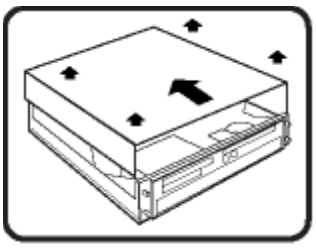
Versuchen Sie nicht, das mitgelieferte Netzkabel zu verändern oder einzusetzen, wenn es nicht exakt dem benötigten Kabeltyp entspricht. Das Produkt kann über mehrere Netzkabel verfügen.

Durch Ausschalten des Netzschalters wird die Wechselstromversorgung des Systems nicht unterbrochen. Um das System vom Netz zu trennen, müssen Sie das Netzkabel aus der Steckdose oder vom Netzteil abziehen.

Vermeiden Sie Verletzungen aufgrund elektrischer oder mechanischer Gefahren; lassen Sie daher den Gehäusedeckel nur von technisch qualifiziertem Personal abnehmen.

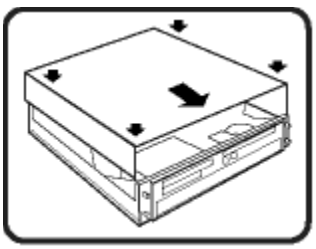
SICHERHEITSHINWEISE: Beachten Sie beim Abnehmen der Gehäuseabdeckung und Arbeiten im Inneren des Systems folgende Schritte:

1. Schalten Sie alle am System angeschlossenen Peripheriegeräte ab.
2. Drücken Sie den Netzschalter, um das System abzuschalten.
3. Ziehen Sie alle Wechselstromkabel vom System und den Steckdosen ab.
4. Kennzeichnen Sie alle Telekommunikationsleitungen und sonstigen Kabel an den E/A-Steckern bzw. Anschlüssen an der Rückseite des Systems, und trennen Sie diese vom Netz.
5. Um sich gegen elektrostatische Entladung zu schützen, sollten Sie eine Antistatik-Manschette tragen, die Sie beim Arbeiten mit Komponenten zur Erdung an einem beliebigen unlackierten Metallteil befestigen.
6. Nehmen Sie das System nicht ohne Abdeckung in Betrieb.



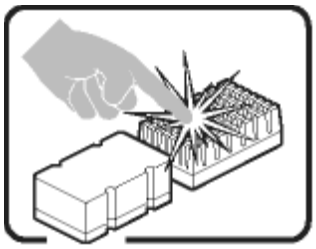
Nachdem Sie die fünf Sicherheitshinweise oben beachtet haben, können Sie die Gehäuseabdeckung abnehmen. Gehen Sie wie folgt vor:

1. Entfernen Sie sämtliche Schrauben der Gehäuseabdeckung, und bewahren Sie diese auf.
2. Nehmen Sie die Gehäuseabdeckung ab.

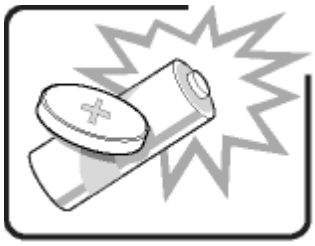


Um eine ordnungsgemäße Kühlung und Belüftung zu gewährleisten, sollten Sie stets die Gehäuseabdeckung anbringen, bevor Sie das System in Betrieb nehmen. Wenn das System ohne obere und vordere Abdeckung betrieben wird, kann es zu einer Beschädigung der Systemkomponenten kommen. So entfernen Sie die Gehäuseabdeckung:

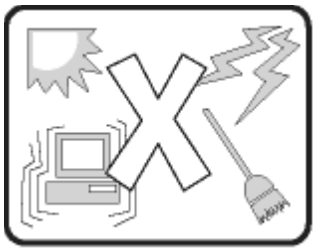
1. Prüfen Sie, daß weder Werkzeuge noch Kleinteile im Innern des Systems vergessen wurden.
2. Prüfen Sie, ob die Kabel und anderen Komponenten richtig installiert sind.
3. Schrauben Sie die Abdeckung mit den zuvor gelösten Schrauben gut am Gehäuse fest.
4. Schließen Sie alle externen Kabel und das Netzkabel an das System an.



Mikroprozessor und Kühlkörper können heiß sein, wenn das System längere Zeit eingeschaltet war. Einige Platinen- und Gehäuseteile können scharfe Spitzen und Kanten aufweisen. Gehen Sie auf jeden Fall mit Vorsicht heran. Das Tragen von Schutzhandschuhen wird empfohlen.

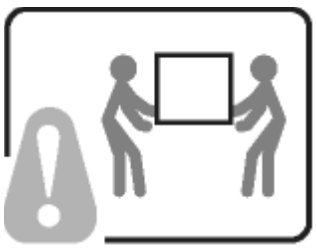


Wird die Batterie unsachgemäß ausgewechselt, besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch denselben oder einen gleichwertigen Batterietyp, der vom Gerätehersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien gemäß den Herstellerempfehlungen.



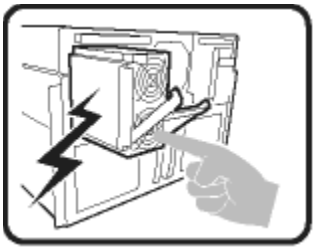
Das System ist für den Betrieb innerhalb normaler Büroumgebungen geeignet. Der Standort sollte folgende Anforderungen erfüllen:

- Saubere, möglichst staubfreie Umgebung.
- Gut belüftet und weit entfernt von Wärmequellen wie direkte Sonneneinstrahlung.
- Vibrations- und erschütterungsfreie Umgebung.
- Abgeschirmt von starken elektromagnetischen Feldern, die durch elektrische Geräte erzeugt werden.
- Entsprechender Schutz bei Betrieb in gewittergefährdeten Gebieten. Es empfiehlt sich, den Computer über einen Überspannungsschutz anzuschließen und die Verbindung zwischen dem Modem und dem Telefonanschluß im Falle eines Gewitters zu trennen.
- Ausgestattet mit einer ordnungsgemäß geerdeten Wandsteckdose.
- Sorgen Sie für ausreichend Platz, damit das Servernetzkabel problemlos erreicht werden kann, da das Gerät nur über dieses Kabel vom Netz getrennt wird.

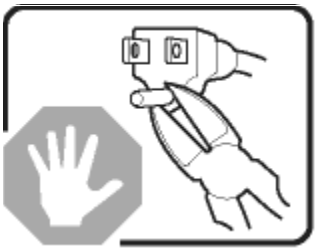


Um einen Server sicher anzuheben und zu bewegen ist eine Person nicht ausreichend. Bewegen Sie den Server, je nach Größe, entweder zu zweit oder mittels einer mechanischen Hilfe.

1.5 Avvertenza: Italiano



L'alimentatore contenuto nel computer non contiene parti riparabili dall'utente. Questo prodotto può essere fornito con più alimentatori. Per l'assistenza fare riferimento solo a personale qualificato.



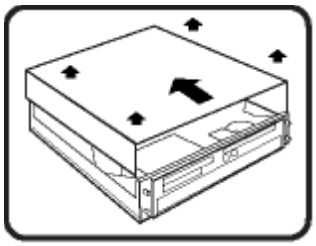
Non tentare di modificare o utilizzare cavi di alimentazione in c.a. che non siano del tipo prescritto. Un prodotto potrebbe contenere più di un cavo di alimentazione in c.a.

L'interruttore di accensione del sistema non scollega tutta l'alimentazione in c.a. del sistema. Per scollegare tutta l'alimentazione in c.a., è necessario disinserire ogni cavo di alimentazione in c.a. dalla presa a muro o dall'alimentatore.

Per evitare incidenti elettrici e meccanici, i coperchi del telaio devono essere rimossi da personale qualificato.

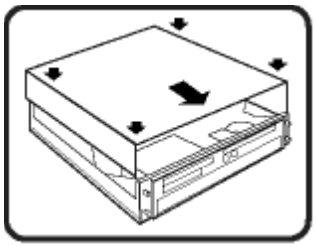
MISURE DI SICUREZZA: Nel caso sia necessario rimuovere i coperchi del telaio per accedere alle parti interne del sistema, procedere nel seguente modo:

1. Spegnere tutte le periferiche collegate al sistema.
2. Spegnere il sistema premendo il pulsante di accensione.
3. Scollegare tutti i cavi di alimentazione in c.a. dal sistema o dalle prese a muro.
4. Apporre un'etichetta e scollegare tutti i cavi di telecomunicazione e i cavi collegati ai connettori di I/O o alle porte sulla parte posteriore del sistema.
5. Assicurare un minimo di protezione da scariche elettrostatiche (ESD) indossando un bracciale antistatico collegato a un componente metallico non verniciato del telaio quando si maneggiano i componenti.
6. Non attivare il sistema nel caso in cui i coperchi del telaio siano stati rimossi.



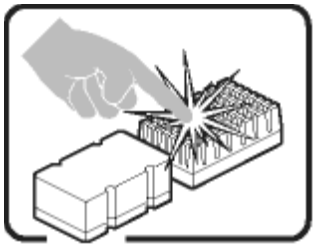
Dopo aver effettuato le operazioni di SICUREZZA descritte in precedenza, è possibile rimuovere i coperchi del sistema. Procedere nel modo seguente:

1. Rimuovere e conservare tutte le viti dei coperchi.
2. Rimuovere i coperchi.

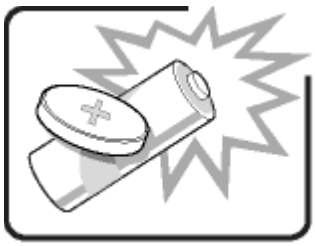


Per evitare che il sistema si surriscaldi e per garantire una ventilazione adeguata, reinstallare sempre i coperchi prima di attivare il sistema. Se si attiva il sistema senza aver riposizionato i coperchi correttamente, alcune parti del sistema potrebbero risultare danneggiate. Per installare i coperchi:

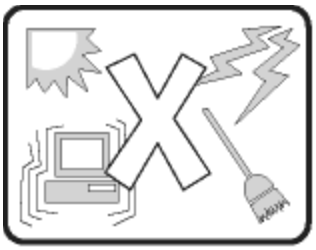
1. Verificare innanzitutto di non aver lasciato utensili o altre parti all'interno del sistema.
2. Verificare che i cavi, le schede aggiuntive e gli altri componenti siano stati installati correttamente.
3. Fissare saldamente i coperchi al telaio utilizzando le viti precedentemente rimosse.
4. Collegare tutti i cavi esterni e il cavo o i cavi di alimentazione in c.a. al sistema.



Se il sistema è stato in funzione, il microprocessore e il dissipatore di calore potrebbero essere caldi. Inoltre su alcune parti della scheda e del telaio potrebbero esserci piedini appuntiti e bordi taglienti. Prestare quindi molta attenzione nel toccarli. Indossare guanti protettivi.

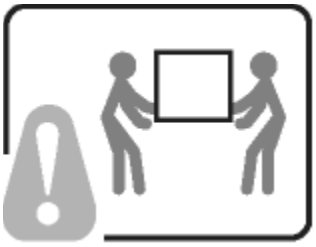


Se sostituita in modo errato, la batteria potrebbe esplodere. Sostituire le batterie scariche solo con batterie originali o del tipo consigliato dal produttore dell'apparecchiatura. Per lo smaltimento delle batterie usate attenersi alle istruzioni del produttore.



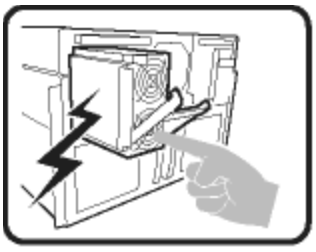
Il sistema è concepito per l'utilizzo in ambienti adibiti a ufficio. Scegliere una postazione con le caratteristiche riportate di seguito.

- Pulita, priva di particelle diverse dalla polvere normalmente presente nell'ambiente di lavoro.
- Aerata e lontana da fonti di calore, compresa la luce solare diretta.
- Lontana da fonti di vibrazione o urti.
- Isolata da forti campi elettromagnetici prodotti da apparecchi elettrici.
- Protetta nelle regioni soggette a temporali. Durante un temporale, si consiglia di collegare il sistema a un limitatore di corrente e di scollegare le linee di telecomunicazione dal modem.
- La posizione prescelta deve essere dotata di una presa a muro con adeguata messa a terra.
- Deve inoltre esserci sufficiente spazio per accedere ai cavi di alimentazione nel caso sia necessario scollegare l'alimentazione principale.

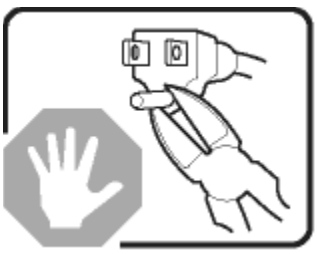


I server possono risultare troppo pesanti per essere sollevati o spostati da una sola persona. Alcuni server devono dunque essere sollevati o spostati da due persone o da un assistente tecnico.

1.6 Advertencia: Español



La fuente de alimentación de este producto no contiene piezas que puedan ser reparadas por el usuario. Puede que haya más de una fuente de alimentación en este producto. Para las reparaciones, consulte sólo con el personal cualificado.



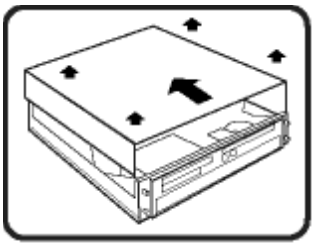
No intente modifica ni utilizar el cable de alimentación de CA suministrado si no es del tipo exacto requerido. Un producto puede estar equipado con más de un cable de alimentación de CA.

El botón de alimentación del sistema no desactiva toda la alimentación de CA del sistema. Para eliminar toda la alimentación de CA del sistema, deberá desenchufar todos los cables de alimentación de CA del enchufe de pared o de la fuente de alimentación.

Para evitar lesiones causadas por descargas eléctricas y mecánicas, únicamente puede retirar las cubiertas de las carcasas el personal técnico cualificado.

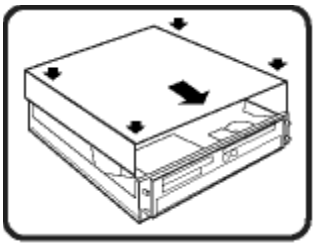
PASOS DE SEGURIDAD: Siempre que retire las cubiertas de las carcasas para acceder al interior del sistema, siga las instrucciones que se especifican a continuación:

1. Desactive todos los dispositivos periféricos conectados al sistema.
2. Pulse el botón de alimentación para desactivar el sistema.
3. Desenchufe todos los cables de alimentación de CA del sistema o de los enchufes de pared.
4. Etiquete y desconecte todas las líneas de telecomunicaciones y todos los cables conectados a los puertos o conectores de E/S de la parte posterior del sistema.
5. Para contar con cierto grado de protección contra descargas electrostáticas (ESD), utilice un brazalete antiestático conectado a la toma de tierra del sistema (cualquier superficie de metal que no esté pintada) al manipular sus componentes.
6. No utilice el sistema sin las cubiertas de la carcasa.



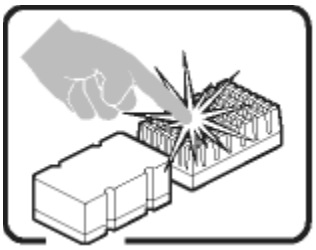
Una vez que haya completado los cinco pasos de SEGURIDAD, podrá retirar las cubiertas del sistema. Para ello:

1. Retire y guarde todos los tornillos de las cubiertas.
2. Retire las cubiertas.

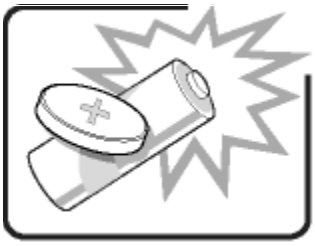


Para obtener una ventilación y un flujo de aire adecuados, reinstale siempre las cubiertas de la carcasa antes de encender el sistema. Si utiliza el sistema sin las cubiertas en su lugar, puede que se dañen algunas piezas del sistema. Para instalar las cubiertas:

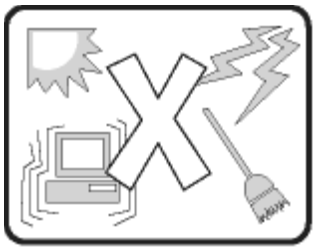
1. Asegúrese primero de no haber dejado piezas o herramientas sueltas en el sistema.
2. Compruebe que los cables, tarjetas adicionales y demás componentes están correctamente instalados.
3. Fije las cubiertas a la carcasa con los tornillos que ha retirado anteriormente y apriételos firmemente.
4. Conecte todos los cables externos y los cables de alimentación de CA al sistema.



Puede que el microprocesador y el disipador de calor se recalienten si se ha estado ejecutando el sistema. Asimismo, puede que algunas tarjetas o piezas de la carcasa tengan patillas o bordes afilados. Los contactos deberán realizarse cuidadosamente. Puede que sea conveniente llevar guantes de protección.

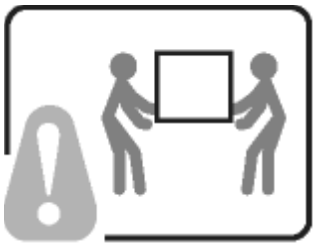


Existe peligro de explosión si la batería se sustituye incorrectamente. Sustitúyala sólo por el mismo tipo o uno equivalente recomendado por el fabricante del equipo. Deseche las baterías usadas según las instrucciones del fabricante.



El sistema está diseñado para que funcione en un entorno de oficina típico. Elija un emplazamiento:

- Limpio y libre de partículas de transportadas por aire (aparte del polvo normal de la habitación).
- Bien ventilado y alejado de las fuentes de calor, incluida la luz del sol directa.
- Alejado de las fuentes de vibración o de los golpes físicos.
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.
- Protegido, si se encuentra en regiones susceptibles de tormentas eléctricas. Se recomienda que enchufe el sistema a un supresor de sobretensiones y desconecte las líneas de telecomunicaciones al módem durante una tormenta eléctrica.
- Que tenga un enchufe de pared correctamente conectado a tierra.
- Con suficiente espacio para acceder a los cables de la fuente de alimentación, ya que éstos sirven como desconectador de alimentación principal del sistema.



Los servidores pueden ser demasiado pesados para que una sola persona los levante o los mueva de forma segura.

Dependiendo del servido, utilice dos personas o una ayuda mecánica para levantar o mover el servidor.

2 Introduction

2.1 Chapter Overview

This chapter contains the following topics:

- "About this Publication" on page 27
- "Related Information" on page 27
- "Product Overview" on page 28.
- "Software Licenses" on page 29
- "Regulatory Specifications and Declarations" on page 29
- "Hardware Warranty Information" on page 30

2.2 About this Publication

This manual addresses the hardware aspects of the Dialogic® DSI SS7G41 Signaling Servers.

Throughout this manual, the Signaling Servers may be referred to:

- "SS7G41 Signaling Server" or "SS7G41".

This manual includes the following:

- A functional description of the internal hardware modules.
- Details of interface connections (including pinouts) on the Signaling Servers.
- Installation instructions.

In addition, the manual describes maintenance procedures, allowing you to make module-level replacements in the field.

It is divided into the following sections:

- Essential safety warnings and cautions. See Chapter 1.
- General introductory information, including information about related documentation and software licensing information (this chapter).
- A section that contains information specific to the SS7G41 Signaling Server. See "Features of the Dialogic® DSI SS7G41 Signaling Server" on page 31).

Important: It is essential that you read the warnings and cautions in Chapter 1 before you start using this product.

2.3 Related Information

2.3.1 Software Manuals

This manual should be read in conjunction with the appropriate software manual:

- *Dialogic® DSI Signaling Servers SS7G41 SIU Developers Manual*
- *Dialogic® DSI Signaling Servers SS7G41 SWS Developers Manual*
- *Dialogic® DSI Signaling Servers SS7G41 Operators Manual*

These manuals provide details of operation, including the user interface, and a description of configuration parameters and commands.

Other User Manuals

Other user manuals that you may find useful include:

- *Dialogic® DSI Signaling Servers SNMP User Manual (05-2616)*

2.3.2 Signaling Board Documentation

The following documents provide information about the Dialogic® DSI SS7 Network Interface Boards that can be installed in a SS7G41:

- *SS7MDL4 Installation Guide (60-0360)*
- *SS7LDH4 Installation Guide (64-1130)*

The current version of software and documentation supporting the SS7G41 product is available on the web at: http://www.dialogic.com/support/helpweb/signaling.

2.4 Product Overview

2.4.1 Introduction

This section provides a brief overview of each the Dialogic® DSI SS7G41 Signaling Server.

2.4.2 Overview

The Dialogic® DSI SS7G41 Signaling Server is a compact 1U server, supporting up to two Dialogic® DSI Network Interface Board.

SS7G41 Signaling Server Chassis

Depending on the product variant, the chassis of the SS7G41 Signaling Server includes:

- Either an AC-input or a DC-input power supply, with a single plug-in power supply module. Optionally, a second module provides hot-swap redundancy.
- A server board (containing one Intel Xeon processor).
- Two hard disk drives, providing RAID redundancy
- Zero, one, or two signaling boards
- Four 1 Gigabit/s Ethernet ports as standard with up to two additional gigabit ethernet ports using the SS7G41NIC accessory
- Cooling fans to cool the server board and other components. The power supplies have their own cooling ventilation

For more information about the features of the SS7G41 Signaling Server, see “Features of the Dialogic® DSI SS7G41 Signaling Server” on page 31.

2.5 Dialogic® DSI SS7G41 Signaling Server Product Variants

The SS7G41 Signaling Server has the following product variants.

Dialogic Part Number	Product ID	Description
310-949	SS7G41A00Q	Signaling Server, AC, 0 boards
310-948	SS7G41AL1Q	Signaling Server, AC, 1 SS7LD board
310-952	SS7G41AL2Q	Signaling Server, AC, 2 SS7LD boards
310-950	SS7G41AM1Q	Signaling Server, AC, 1 SS7MD board
310-951	SS7G41AM2Q	Signaling Server, AC, 2 SS7MD boards
310-953	SS7G41D00Q	Signaling Server, DC, 0 boards
310-956	SS7G41DL1Q	Signaling Server, DC, 1 SS7LD board
310-957	SS7G41DL2Q	Signaling Server, DC, 2 SS7LD boards
310-954	SS7G41DM1Q	Signaling Server, DC, 1 SS7MD board
310-955	SS7G41DM2Q	Signaling Server, DC, 2 SS7MD boards
300-409	SS7G41SACPSU	650W AC power supply
300-410	SS7G41SDCPSU	650W DC power supply
300-411	SS7G41BHDD	250GB SATA HDD
300-413	SS7G41RSLKIT	Rack Mount Kit 22"-30.5"
300-414	SS7G41NIC	Dual Gigabit Ethernet NIC
300-415	SS7G41RSLKITXL	Rack Mount Kit 28"-35.5"

2.6 Software Licenses

Refer to the *Dialogic® DSI SS7G41 Operators Manual* for a list of software licenses.

2.7 Regulatory Specifications and Declarations

Specifications demonstrating compliance, declarations of the manufacturer or importer and general compliance information are detailed in the Dialogic® DSI SS7G41 and on the internet at: http://www.dialogic.com/declarations.

2.8 Hardware Warranty Information

For information about the warranties that apply to this product, please refer to the following:

http://www.dialogic.com/warranties

3 Features of the Dialogic® DSI SS7G41 Signaling Server

3.1 Chapter Overview

This chapter contains the following topics:

- "Physical Specifications" on page 32
- "Environmental Specifications" on page 33
- "Product Reliability" on page 34
- "Main Features" on page 34
- "Controls and Indicators" on page 38
- "Signaling Boards" on page 40
- "Power Inputs" on page 40
- "PCM Interface Ports" on page 44
- "Signaling Links" on page 45
- "Serial Port (COM1)" on page 47
- "Universal Serial Bus (USB) Interface" on page 49

3.2 Physical Specifications

The physical specifications of the Dialogic® DSI SS7G41 Signaling Server are described as follows.

Table 1. Physical Specifications

Dimension	Value
Height	1.74 inches (44mm)
Width	16.93 inches (430.0 mm)
Depth	20.4 inches (519 mm)
Front clearance	2.0 inches (76 mm)
Side clearance	1.0 inches (25 mm)
Rear clearance	3.6 inches (92 mm)
Weight (approximate) One digital line interface One SS7 interface Redundant AC power supplies	26.8 lbs (12.16 kg)

3.3 Environmental Specifications

The environmental specifications of the SS7G41 are described as follows.

Table 2. Environmental Specifications

Environment	Specification
Temperature, operating	+5° C to +40° C (+41° F to +104° F).
Temperature, non-operating	-40° C to +70° C (-104° F to +158° F).
Altitude	0 to 900m (2,950 ft.) @ 35° C, temperature de-rated by 1° C for each additional 300m (985 ft).
Humidity, operating	5% to 95%, non-condensing at temperature of 38° C.
Humidity, non-operating	95%, non-condensing at temperatures of 23° C (73° F) to 40° C (104° F).
Acoustic	Sound power: = 7 bels at ambient temperatures <24° C measured at bystander positions in operating mode.
System Cooling Requirement	1200 BTU/hr with single power supply unit. 1250 BTU/hr with dual power supply units.

3.4 Product Reliability

Product reliability is dependent upon the number of power supply modules and the number and type of Dialogic® DSI SS7 Network Interface Boards. Table 3 shows the values of mean time between failure (MTBF) in hours. Predictions are in accordance with the Telcordia Method @ 40°C.

Table 3. Calculated Product Reliability

Dialogic® DSI SS7MDL4 Network Interface Boards			
MTBF (hours) with	No Boards	One SS7MDL4	Two SS7MDL4
Dual PSU's	AC: 133,000 DC: 135,000	AC: 114,000 DC: 115,000	AC: 100,000 DC: 100,000
Single PSU	AC: 82,000 DC: 93,000	AC: 75,000 DC: 83,000	AC: 68,000 DC: 75,000
Dialogic® DSI SS7LDL4 Network Interface Boards			
MTBF (hours) with	No Boards	One SS7LDH4	Two SS7LDH4
Dual PSU's	AC: 133,000 DC: 135,000	AC: 111,000 DC: 112,000	AC: 95,000 DC: 96,000
Single PSU	AC: 82,000 DC: 93,000	AC: 73,000 DC: 81,000	AC: 66,000 DC: 72,000
Dialogic® DSI SS7G41 Accessories			
300-409	SS7G41SACPSU	650W AC power supply	208,010
300-410	SS7G41SDCPSU	650W DC power supply	88,766
300-411	SS7G41BHDD	250GB SATA HDD	50,000
300-414	SS7G41NIC	Dual Gigabit Ethernet NIC	750,000

3.5 Main Features

3.5.1 Overview

The server board supports the fitting of up to two Dialogic® DSI SS7LDH4 Network Interface Boards, providing up to 16 LSL SS7 links each; or two Dialogic® DSI SS7MDL4 Network Interface Boards, providing up to 124 LSL SS7 links each. It supports up to eight T1/E1 interfaces, depending on the product variant.

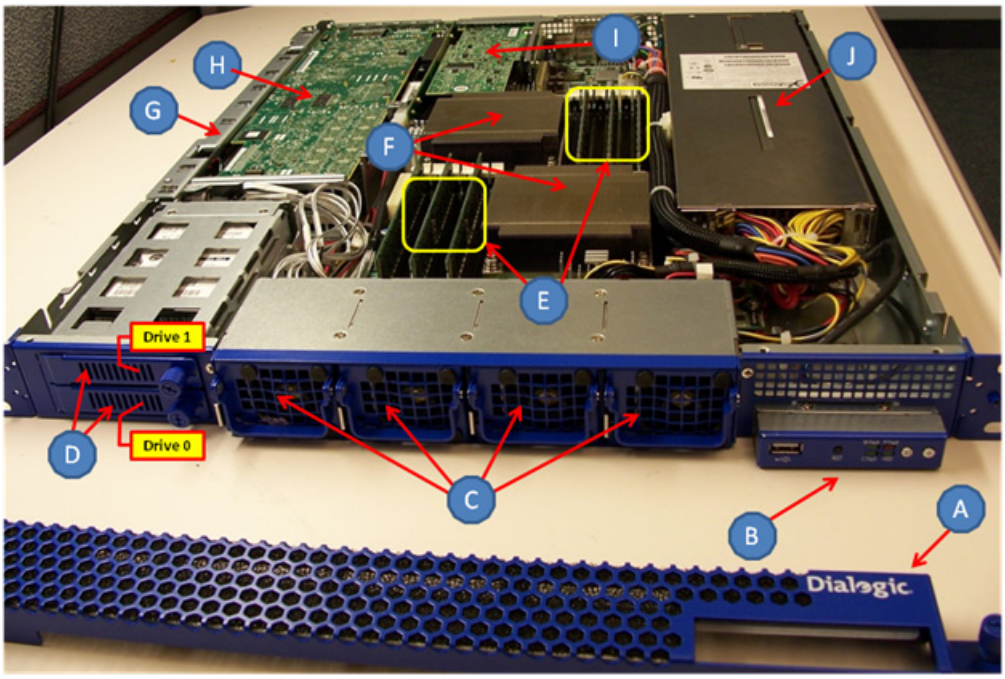
The SS7G41 Signaling Server comes with two hard disk drives that are equipped with RAID software, set up in a RAID 1 configuration.

The product is supplied with a single AC or DC power supply module, as determined at the time of order.

3.5.2 Server Components

The figure below shows the internal components of the SS7G41 with the top cover and front bezel removed.

Figure 1. Server Components



A. Front Panel Bezel (removed for clarity)

B. Front Panel LEDs, Switches, and USB Port

C. Four Fan Assemblies

D. SATA hard disk drive bays (2)

E. System Memory

F. Processors and Heat Sinks

G. PCI Support Bracket (Full Length)

H. PCIe Board

I. Hardware RAID Controller board (Not fitted for the SS7G41 Signaling Servers)

J. Power Supply cage

Figure 1. is for reference only. The actual server may vary slightly in terms of boards installed.

3.5.3 Front Panel

Front Panel with the Bezel Installed

The following figure shows the front panel of the SS7G41 with the bezel installed.

Figure 2. Front Panel (Bezel Installed)

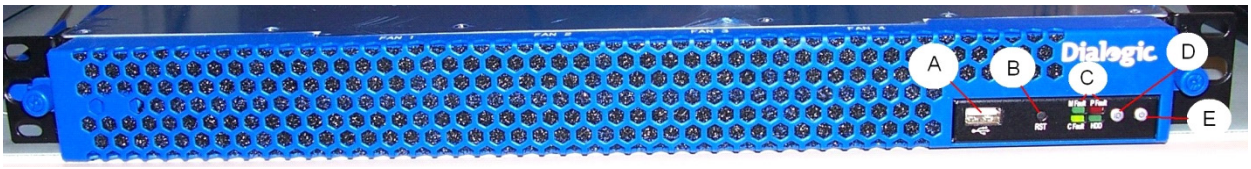


Table 4. Front Panel (Bezel Installed)

Item	Description
A	USB Port
B	Reset Switch
C	Status LEDs
D	ID Switch
E	Power Switch

The following figure shows the front panel of the SS7G41 with the bezel removed.

Figure 3. Front Panel (Bezel Removed)

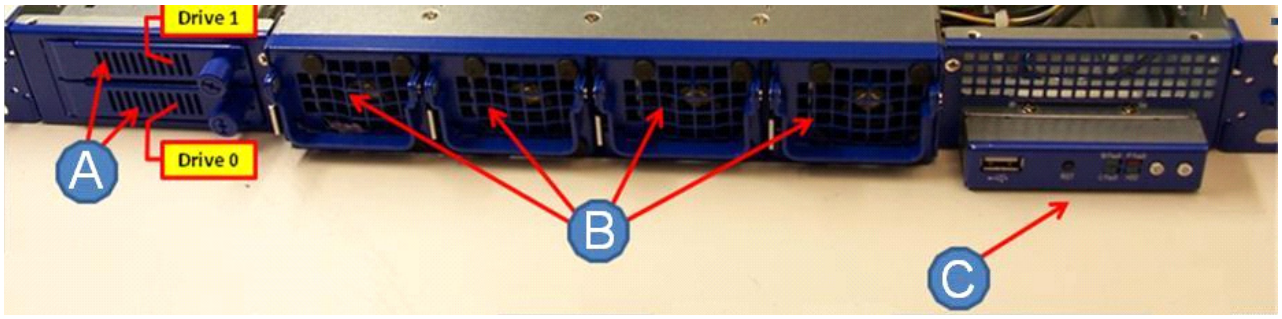


Table 5. Front Panel (Bezel Removed)

Item	Description
A	HDD bay 0 & 1
B	Fans
C	Front Panel; LEDs, Switches, and USB Port

3.5.4 Rear Panel

The following figure shows the rear panel of the SS7G41 Signaling Server.

Figure 4. Rear Panel

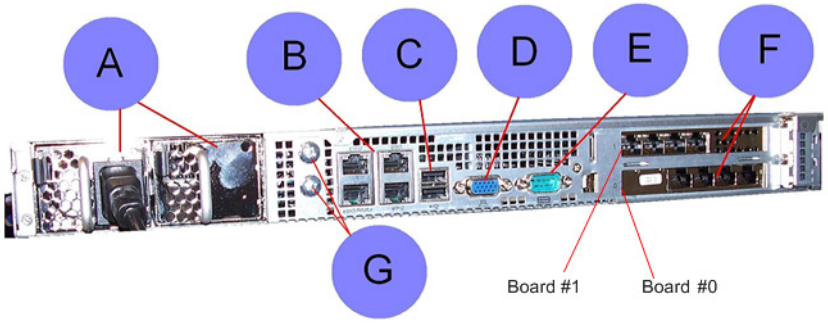


Table 6. Rear Panel

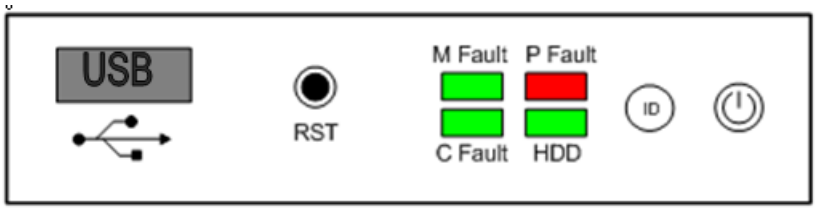
Item	Description
A	AC (or DC) System Power modules
B	Ethernet ports 0, 1, 2 & 3
C	USB Interfaces
D	VGA video output port (Not used)
E	Serial port
F	PCIe Boards 0 & 1 (SS7 Interface & Digital line Interface boards)
G	Earth Ground
Note: Figure 4. shows a single AC-input power configuration with a filler module on the right side. Item A can also be configured for Dual AC or Dual DC operation.	

3.6 Controls and Indicators

3.6.1 Main Switches and LEDs

The front panel of the SS7G41 includes several switches and indicators, which are located on the front panel.

Figure 5. Switches and LEDs (Front Panel)



Component	Description
USB	Universal serial bus connector (USB 2.0).
RST	Reset button. Push to reboot the server. **Caution:** Using this button may result in a service interruption.
M Fault	Minor fault indicating a warning. For example, the temperature of a component has reached a critical temperature reading.
P Fault	Power supply fault. If there is a fault with a fan, temperature, or voltage over/under reading, the LED illuminates and an audible alarm sounds. Check the power supply module. Replace the faulty power supply module with a good module to reset the P Fault LED.
C Fault	Critical fault indicating a non-recoverable event. The system will perform a graceful shutdown to protect components from thermal damage.
HDD	Hard drive activity. Blinks when drives are being read or written to. It does contain a fault indicator so it does not change color.

3.6.2 Ethernet Port LEDs

Two indicator LEDs are provided for each of the four Ethernet ports. The LEDs are integrated into the quad RJ45 stacking connector and are designed to support link and activity indications for each of the four Ethernet ports. The green LED to the left of each connector indicates the status and activity of the link, and the bi-color LED to the right of each Ethernet connector indicates link speed. The following table lists the various LED indication combinations and their meanings.

Figure 6. Ethernet Port LEDs

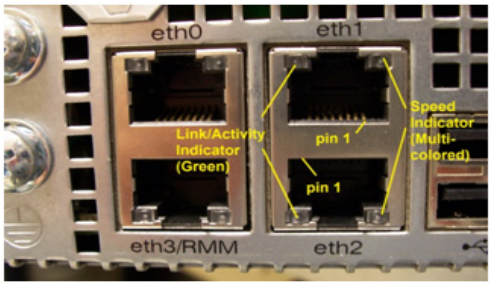


Table 7. Ethernet Port LEDs

Link LED Indication	Speed LED Indication	Meaning
Off	Off	Port disconnected. No link
Solid green	Off	Port connected at 10 Mbps, no link activity
Solid green	Solid green	Port connected at 100 Mbps, no link activity
Solid green	Solid amber	Port connected at 1 Gbps, no link activity
Blinking green	Off	Port connected at 10 Mbps, activity on link
Blinking green	Solid green	Port connected at 100 Mbps, activity on link
Blinking green	Solid amber	Port connected at 1 Gbps, activity on link

3.7 Signaling Boards

The SS7G41 Signaling Server uses intelligent multi-port interface boards for the processing of SS7 signaling links. The signaling boards are PCIe form factor boards that can occupy one board position in a riser board mounted on the server board. SS7 signaling boards each provide four primary-rate telecommunications (PCM) interfaces, configured at run-time under software control to operate as a T1 or E1 interface with selectable line code and frame format.

The number of SS7 signaling links that can be terminated by an SS7 signaling board depends on the board type as described below. Signaling links can operate at 64kb/s, 56kb/s or 48kb/s, and support Q.703 Annex (HSL).

Depending on the variant, an SS7G41 can contain either one or two Dialogic® DSI SS7MDL4 OR SS7LDH4 Network Interface Board.

Each SS7MDL4 board supports up to 124 channelized LSL links or four HSL SS7 links.

Each SS7LDH4 board on the SS7G41 supports up to 16 channelized LSL links.

Alternatively, the SS7G41 can be used without SS7 signaling boards, typically for use in SIGTRAN signaling applications.

For more information about Dialogic SS7 Signaling Boards refer to the following:

http://www.dialogic.com/support/helpweb/signaling

3.8 Power Inputs

The SS7G41 Signaling Server can be ordered with one of the following:

- AC-input power supply
- DC-input power supply

The SS7G41 chassis can contain up to two power supply modules and can be configured as follows:

- One power supply module installed (this is the factory standard setting). Units configured in this manner can supply a fully loaded product, but do not provide dual redundancy. The second position contains a filler module.
- Two power supply modules installed. Units configured in this manner are dual redundant. In the event of a failure of any one power supply module, the operation of the product is unaffected. When the product is configured with two power supply modules, the hot-swap feature allows you to replace a failed module without interrupting system functionality.

Both power supplies provide Earth grounds, but it is advised to use the designated earth ground connections provided in the back of the server.

3.8.1 AC Power Input

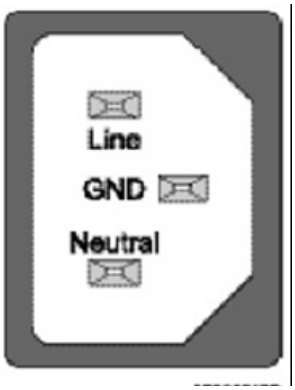
Note: Ensure that the power source meets the requirements for mains AC power disconnect and "overcurrent protection" as described in "Warnings, Cautions and Safety Information: English" on page 7.

The AC power supply module specification is described as follows.

Input topology	AC input power connectors for each AC-input power supply module
Connector type	IEC 320 -C4 Sheet 13.
Input voltage	90VAC to 264VAC.
Frequency range	47 – 63Hz
Maximum continuous input current	8A @ 90 – 132Vac 4A @ 180 – 264Vac
Input Current	The maximum allowable input current shall be 15 Amps
Efficiency	83% minimum at 100-264VAC for the Max load

A single IEC320-C14 receptacle is provided at the rear of each AC-input power module installed in the system. This connector provides the safety ground connections for the product.

Figure 7. AC Power Input Connector



The use of an appropriately sized power cord and AC main is recommended.

When selecting a suitable AC power outlet for connection of the other end of the power cord, verify that the outlet is earthed and that it complies with AC power supply warnings in "Warnings, Cautions and Safety Information: English" on page 7.

If in doubt, consult a qualified service technician.

3.8.2 DC Power Input

Important: Ensure that the power source meets the requirements for mains DC power disconnect and "overcurrent protection" as described in "Warnings, Cautions and Safety Information: English" on page 7.

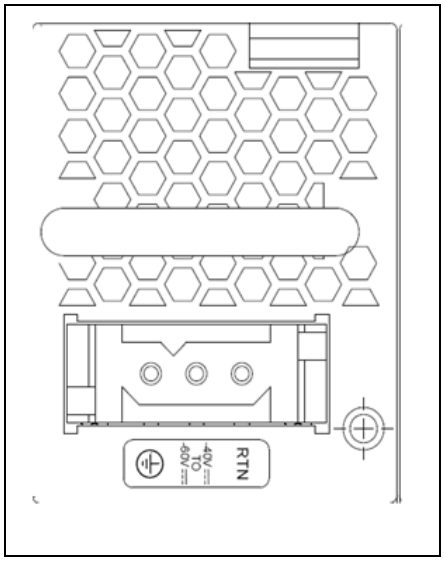
The DC power supply module specification is described as follows.

Input topology	Four-terminal DC input power connector for each power supply module
Connector type	Screw barrier connectors
Input voltage	- 36 to -72 VDC (nominal -48 to -60 VDC) Input DC voltage can be taken to 75V For One Second.
Maximum input current	16.0 Amps ***Note:*** Maximum input current is measured at the lowest input voltage that the power supply continues to operate. This is not the same as used for determining agency input current markings.
Input power	576 Watts, fully equipped
Efficiency	>84% minimum at -48 to -72V for the max load

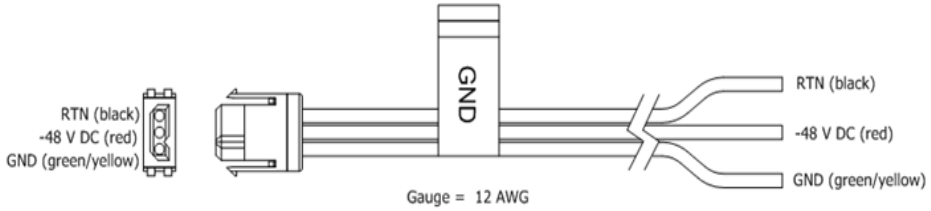
A 3-pin DC connector (Positronic Industries p/n PLAH03M4BN0A1-AA- E1A or equivalent) is used in the DC power supply modules to provide the DC-input power connection.

A 4m DC cable is provided with all DC products, rated at 25Amps. Using appropriately sized power wire and DC main is recommended.

Figure 8. DC Power Input Connector



DC power pigtail 4 m cable (P/N 83369)



The pin-out of the DC input connector is shown in the table below.

Table 8. DC Power Supply Module Input Pin Assignments

Pin #	Description
1	RTN (EGND)
2	-48V
3	GND

3.9 PCM Interface Ports

The PCM interface specification is described as follows.

Ports	4 T1/E1 signaling ports
Data rate	2048 kbit/s (E1) or 1544 kbit/s (T1) user configurable for each individual port
Connector type	RJ45
Pulse shape	ITU-T G.703, AT&T TR62411 or TIA-968-A/CS-03
Frame format	E1, E1-CRC4, D4, ESF, ESF-CRC6
Line code	HDB3, AMI (ZCS), AMI, B8ZS

Each SS7 Signaling Board provides four primary rate telecommunications (PCM) interfaces, configured at run-time under software control to operate as balanced T1 or E1 ports, with selectable line code and frame format. For information on setting the port configurations, see the appropriate User Manual. “Related Information” on page 27 lists these manuals.

Figure 9. E1/T1 Ports on Dialogic® DSI SS7LDH4 Network Interface Boards

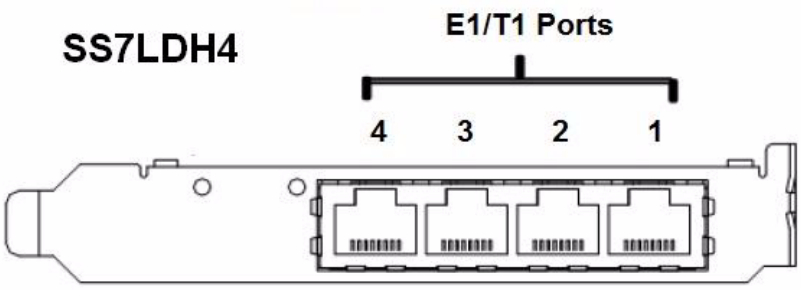
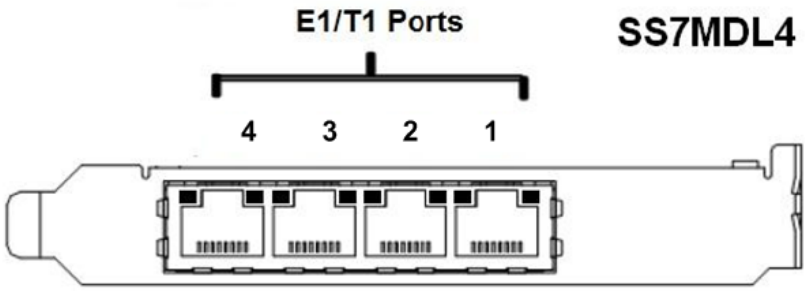


Figure 10. E1/T1 Ports on Dialogic® DSI SS7MDL4 Network Interface Boards



The T1/E1 ports on the SS7 Signaling Boards are Safety Extra Low Voltage (SELV), that is, the apparatus connects to the outside network via Network Termination units (NT1). Use twisted-pair, screened cables, grounded at both ends. Also refer to the “Telecommunications” section in the Dialogic® DSI SS7G41 Signaling Servers Regulatory Notices for information on potential usage as TNV-1 ports.

The connectors are 8-way RJ45, and are labeled L1 to L4 in Figure 9 and Figure 10. These labels can be used together with the SS7 Signaling Board position number to give each port a unique identifier for wiring schedules and unit configuration.

The connector pinout and signal descriptions are shown in below.

Table 9. PCM Interface Port Connector Pinouts

Pin No	Direction	Function
1	Input	Receive
2	Input	Receive
3	Not applicable	Not Used
4	Output	Transmit
5	Output	Transmit
6	Not applicable	Not Used
7	Not applicable	Not Used
8	Not applicable	Not Used

3.10 Signaling Links

The signaling link specification is described as follows.

Signaling links	The number of signaling links depends on the product variant, which determines the type and number of SS7 Signaling Boards included.
Source	PCM (T1/E1) interface
Data rate	48 kbit/s, 56 kbit/s and 64 kbit/s LSL and HSL (Q.703 Annex A). HSL only available on SS7G41xMxxx product variants.
Timeslot	Fully programmable

3.11 Ethernet Interfaces

The Ethernet interfaces are described as follows.

Quantity	Four provided by the server board
Connector	RJ45
Speed	10Base-T (10 Mbit/s), 100BaseTX (100 Mbit/s) and 1000Base-T (1 Gigabit/s), automatically detected and switched.

For EMC product regulation compliance for intra-building lightning surges, the product must only be used with LAN cables that are grounded at both ends.

Four Ethernet connectors are provided on the SS7G41 Server Board. Figure 11 shows the Ethernet connectors provided by the Server Board.

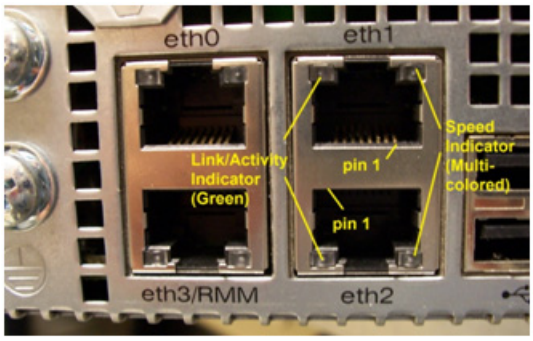
Additional Ethernet ports may be added by fitting a PCIe SS7G41NIC's, giving a total of six ports.

When fitting a single additional SS7G41NIC accessory board it must be fitted in the top slot (slot 1). This will provide Eth4 and Eth5 (reading left to right)

The Ethernet interface connectors incorporate status LED indicators. The LEDs on the network interface connectors indicate link/activity on the network and the speed of operation. The green LED, when on, indicates network connection and when blinking indicates TX/RX activity. The speed LED indicates 1000 Mbps when amber, 100 Mbps when green, and 10 Mbps when off. Figure 10 shows the Ethernet connector pinouts.

A NIC Activity LED (green) on the front panel provides an indication of activity on the ENET 1 or ENET 2 ports. See Section 3.6.1, "Main Switches and LEDs" on page 38 for more information.

Figure 11. Ethernet Interface Connectors



For information about the operation of the LEDs on the Ethernet Interface Connectors, see Section 3.6.2, "Ethernet Port LEDs" on page 39.

Table 10. Ethernet Connector Pin-Out

Pin Number	Signal Name	Description
1	BI_DA+	Bi-directional pair A, +
2	BI_DA-	Bi-directional pair A, -
3	BI_DB+	Bi-directional pair B, +
4	BI_DC+	Bi-directional pair C, +
5	BI_DC-	Bi-directional pair C, -
6	BI_DB-	Bi-directional pair B, -
7	BI_DD+	Bi-directional pair D, +
8	BI_DD-	Bi-directional pair D, -

3.12 Serial Port (COM1)

The serial interface port specification is described as follows.

Quantity	One mounted on the rear of the chassis. ***Note:*** The serial port located on the front of the chassis is not enabled on these products.
Connector	DB9
Electrical	RS232: 9600, n, 8, 1, no flow control
Signal	TXD, RXD, DSR, DTR, GND

The serial port (COM1) provided on the back panel is an RS232 port using a DB9 connector (Figure 12). The serial port can be used for configuration and management of the product. The serial port is designated as SELV.

Figure 12. Serial Port (COM1) Connector

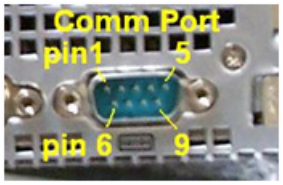


Table 11. Rear Panel Serial Port (DB9) Connector Pin-Out

Pin Number	Signal
1	N/A
2	RXD - Received data
3	TXD - Transmit Data
4	DTR - Data terminal ready
5	GND - Signal ground
6	DSR – Data set ready
7	N/A
8	N/A
9	N/A

3.13 Universal Serial Bus (USB) Interface

The USB port specifications are as follows.

Quantity	Three external USB ports. ***Note:*** There is an additional USB port, Port 3, located internally that is not used at this time.
Location	USB ports 0 and 1 are located on the rear panel. USB port 2 is located on the front panel.

Figure 13. Rear Panel Showing USB Ports

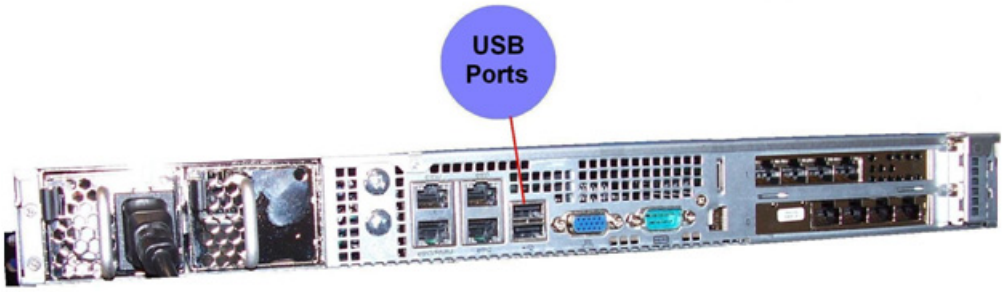


Figure 14. Front Panel Showing USB Port

The SS7G41 supports connection of a single USB disk device to a USB port for maintenance purposes.

Note: Connection of multiple USB devices is not supported.

Figure 15. External USB Connector

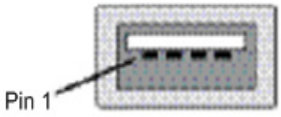


Table 12. USB Connector Pin-Out

Pin Number	Signal
1	Fused Vcc (+ 5V w/over-current monitor of ports 0, 1, 2 and 3)
2	DATAL0 (differential data line paired with DATAH0)
3	DATAHO (differential data line paired with DATAL0)
4	GND

Note: An optional second power supply module can be fitted on the SS7G41.

4 Working with the Dialogic® DSI SS7G41 Signaling Server

IMPORTANT

The actions described in this chapter must be performed by a qualified service technician

4.1 Overview

This chapter contains the following topics:

- "Guidelines for Installation" on page 51
- "Removing and Installing the Front Bezel" on page 52
- "Removing and Installing the Chassis Cover" on page 53
- "Removing the Processor Air Duct" on page 56
- "Replacing a Power Supply" on page 59
- "Grounding a DC-Powered System" on page 58
- "Installing the New Hard Disk Drive" on page 62
- "Preparing Dialogic® DSI SS7 Network Interface Boards for Installation" on page 63
- "Back-up Battery - Replacement" on page 72

For an overview of the internal product layout, see "Main Features" on page 34.

Before starting these procedures, read the warnings and cautions in Chapter 1, "Warnings, Cautions and Safety Information".

4.2 Guidelines for Installation

Installation of a Dialogic® DSI SS7G41 Signaling Server involves the following tasks performed in the order shown. References to more detailed task descriptions are provided where appropriate.

Follow the steps below to install an SS7G41 unit:

1. Read the warnings and cautions listed in Chapter 1, "Warnings, Cautions and Safety Information".
2. Install any hardware options purchased. (For example, if you are adding an extra power supply, see Section 4.8, "Replacing a Power Supply" on page 59).
3. Physically install the product in an equipment rack or as a free standing unit.
4. Connect the product to ground. If you are installing:
   - — A DC-powered product, see Section 4.7, "Grounding a DC-Powered System" on page 58.
   - — An AC-powered product, the ground connection and power connection are part of the same operation. See the step below.
5. Connect the power source. If you are:
   - — Installing a DC-powered product for the first time, see Section 3.8.2, "DC Power Input" on page 42 and Section 4.8.2, "Installing the Power Supply" on page 61.

— Replacing a DC-powered product, see Section 4.8, “Replacing a Power Supply” on page 59.

— Installing an AC-powered product, see Section 3.8.1, “AC Power Input” on page 41 and Section 4.8.2, “Installing the Power Supply” on page 61.

6. Connect line interface and Ethernet interface cables. See Section 3.9, “PCM Interface Ports” on page 44 and Section 3.10, “Signaling Links” on page 45 for connector details and pinout information for the various interfaces. To avoid EMC problems with the installation, comply with the instructions and advice given in the “Essential Compliance Information” section in the Dialogic® DSI SS7G41 Regulatory Notices (provided with the product).

   For safety and operational aspects affecting network connections, comply with the advice given in the Dialogic® DSI SS7G41 Regulatory Notices. In particular, “Essential Compliance Information: Telecommunications” for general requirements, and region-specific information in “Regional Regulatory Notices”, specifically:

   — For the United States, “FCC Part 68 Statement”.
   — For Canada, “Telecommunications Attachment Notice”.
   — For Australia and New Zealand, “Telecommunications Notice”.

7. Power up the product.
8. Complete the following software and configuration steps, all of which are fully described in the appropriate User Manual.

   — Check whether a software download and upgrade is required.
   — Install optional software licenses.
   — Set the IP addresses of the unit.
   — Enable the selected operating mode (SIU or SWS).

   Note: You must ensure that the product configuration, and any related application that is running, provides an implementation that complies with the services offered by the local Public Switched Telephone Network (PSTN) operator. If in doubt, consult the network specifications.

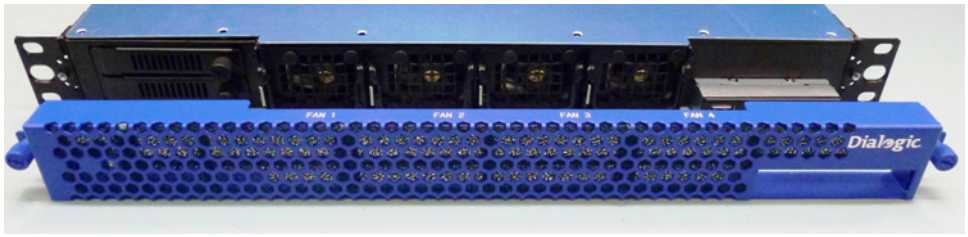
4.3 Removing and Installing the Front Bezel

4.3.1 Removing the Front Bezel

During this procedure, ensure that you hold the bezel in place to prevent it from falling from the chassis.

1. Unscrew both the left and right-side captive screws to release the bezel (“A” in Figure 16 below).
2. Remove the front bezel from the chassis.

Figure 16. Removing the Front Bezel



4.3.2 Re-Installing the Front Bezel

While holding the front bezel in place, insert and then tighten the left and right captive screws at the edges of the bezel.

4.4 Removing and Installing the Chassis Cover

You will need to remove the top cover to add or replace components inside the server.

4.4.1 Removing the Chassis Cover

Attach an anti-static strap

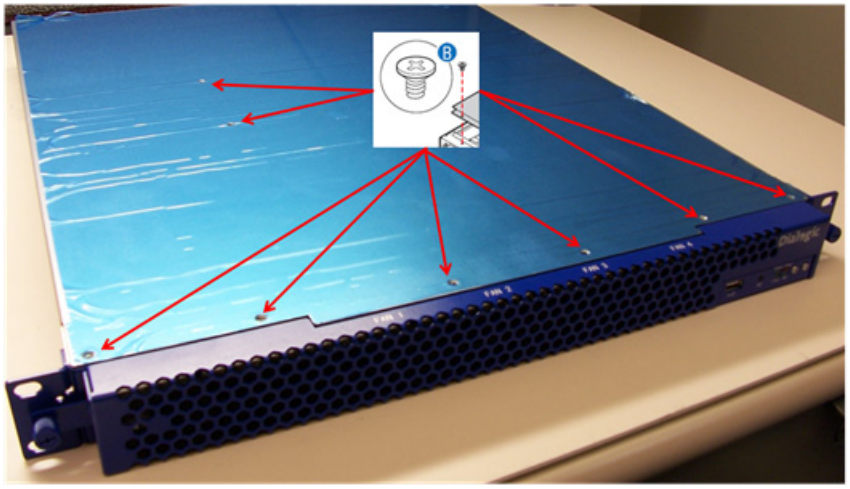
Before removing the chassis cover, attach an anti-static strap as follows:

1. Attach a user-supplied anti-static wrist strap to the server before handling any internal or removable components.
2. Use best current practices and follow all manufacturers' recommendations when dealing with ESD and SS7G41 chassis.

Chassis Cover

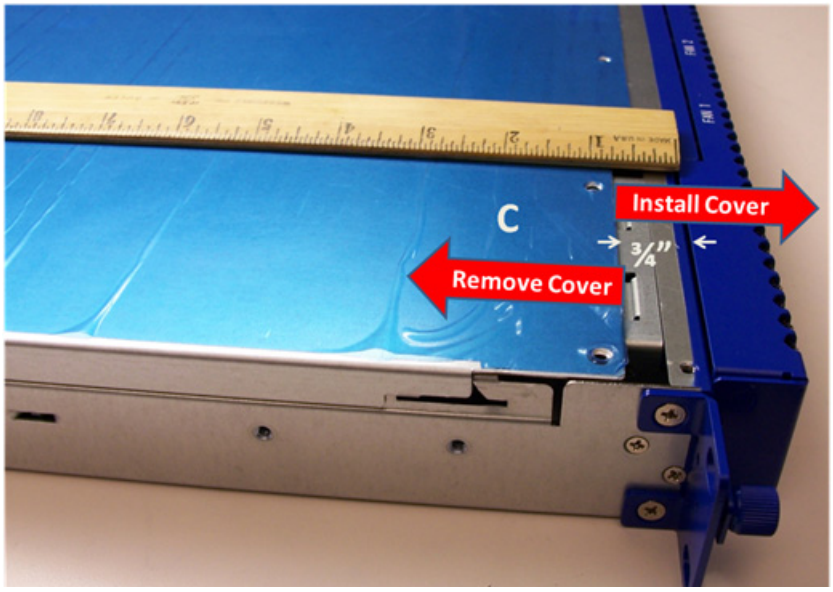
1. Remove and save the eight screws near the top-front and middle of the chassis cover ("B" in Figure 17 below).

Figure 17. Removal of top cover



2. Slide the top cover back approximately ¾" until it stops. ("C").

Figure 18. Slide Cover to Remove / Install



3. Lift the cover straight up to remove it. ("C").

4.4.2 Installing the Chassis Cover

Before You Begin

1. Prior to installing the chassis top cover, check for components that may cause interference. The cover should not be pressing against any of the components within the chassis.
2. Align the chassis cover over the chassis leaving approximately 3/4" horizontal gap between the front edge of the cover and the front edge of the chassis, and then lower the cover onto

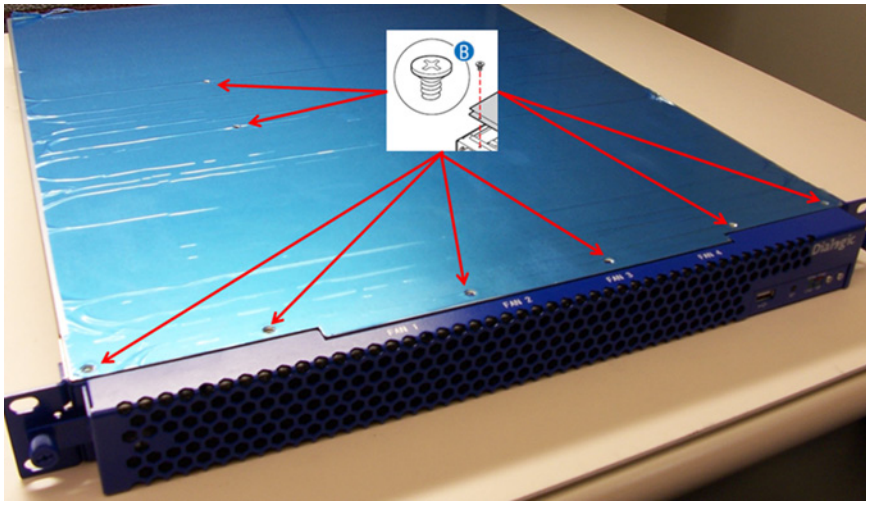
the chassis (the gap is required so that the cover drops down and engages with slots in the chassis). See Figure 19.

3. Slide the cover towards the front of the chassis until it stops.

Caution: After the cover stops, make sure that the clearance holes in the cover align with the threaded holes in the chassis, otherwise the cover retention screws may not go in properly and may strip the threaded holes in the chassis.

4. Install the eight cover retention screws as shown in the figure below:

Figure 19. Chassis Cover Retention Screws



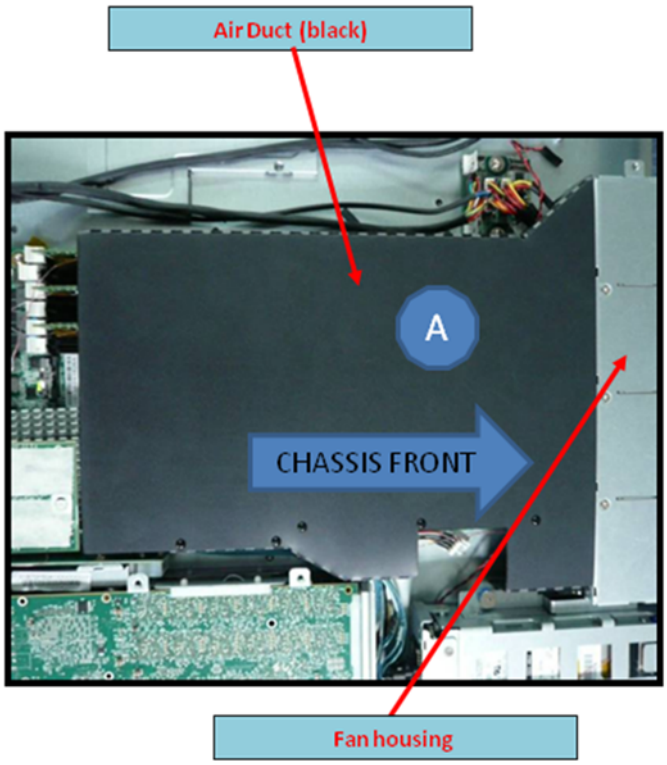
Caution: Do not over tighten the cover retention screws. Doing so may strip the threaded holes in the chassis. The torque specification for the screws is 3.5 kgf-cm (3.04 lbf-inches).

4.5 Removing the Processor Air Duct

This procedure is required only to access Processor, DIMM sockets, to set the SW1 DIP switches, riser, and to access the disk drive cable assembly.

1. Ensure that you have followed the safety instructions set out in Essential Safety: Before You Begin.
2. Remove the top cover. For instructions, see Section 3.5.2, “Server Components” on page 35.
3. Identify and remove the Air Duct assembly. Take note of the position of the air duct for reassembly later. Lift the air duct assembly vertically from the server platform (“A” in Figure 20 below). There is no physical retention hardware, only a friction fit holding the air duct in place.

Figure 20. Air Duct Location

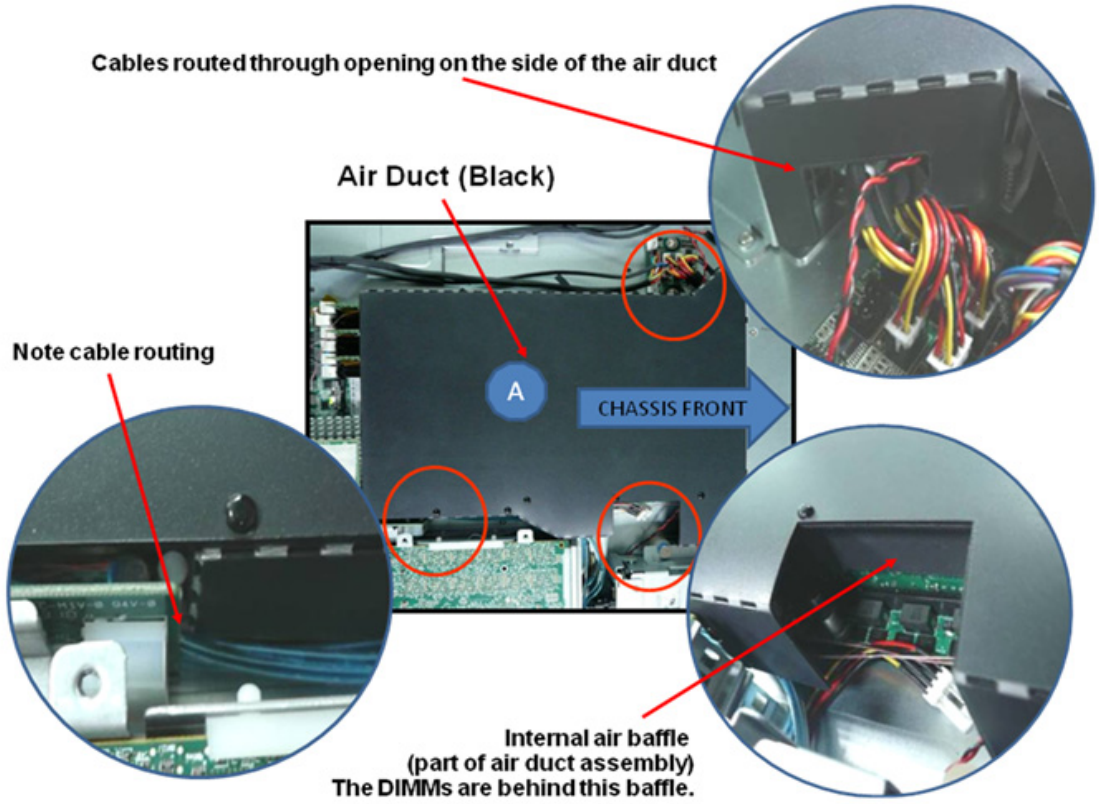


4.6 Re-installing the Processor Air Duct

Replace the air duct assembly as follows:

1. Position the processor air duct assembly over the processor sockets and DIMM sockets as shown in Figure 20.
2. Lower the air duct into position.
   - The ATX power bundle may need to be temporarily pulled up and away from the heat sink to allow the air duct to be installed.
   - The internal air baffle that is part of the air duct assembly must be positioned on the outside of the memory (DIMMs). This may require manually adjusting the internal baffle so that it doesn't catch on the DIMM socket clips. See Figure 21.
   - Use caution and make sure that there are no wires pinched as a result of the air duct being installed. There are a number of places around the perimeter of the air duct where this can happen. See Figure 21.
   - The air duct is retained in the chassis by friction; there is no hardware holding it in place.
3. When properly installed, the top of the installed air duct should be flush with the top surface of the fan housing (see Figure 20).

Figure 21. Air Duct Installation


Cables routed through opening on the side of the air duct
Air Duct (Black)
Note cable routing
A
CHASSIS FRONT
Internal air baffle
(part of air duct assembly)
The DIMMs are behind this baffle.

4.7 Grounding a DC-Powered System

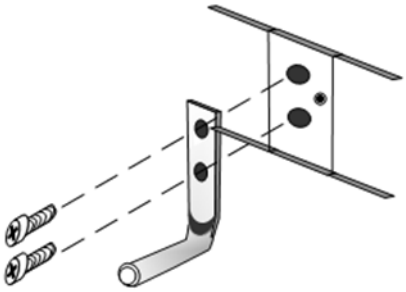
Grounding the server is required because DS-1 connections can be susceptible to lightning strike or power cross before a power source is provided for the device. Do not connect the server to a power source until it is properly grounded.

Follow the steps below:

1. Use a two-hole #10x5/8 ground lug (included in the kit) or equivalent to ground the server.
2. Crimp the grounding wire to the lug (refer to "Grounding the Server" on page 9).
3. Remove the screws that come with the server and use them to secure the lug as shown in the figure below.

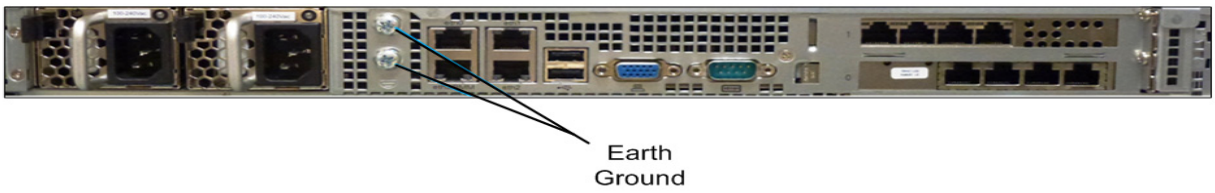
Note: Refer to Figure 23 for the location of earth ground.

Figure 22. Grounding the server



4. Tighten each screw to 10 llbs-in torque.

Figure 23. Earth Ground, Rear Panel



4.8 Replacing a Power Supply

The power source should be disconnected from any module while it is being removed or installed. When hot-swap functionality is required, verify that one module remains installed, connected, and powered at all times.

The figure below shows the AC and DC Power Supplies from the Rear Panel.

Figure 24. AC and DC Power Supplies, Rear Panel

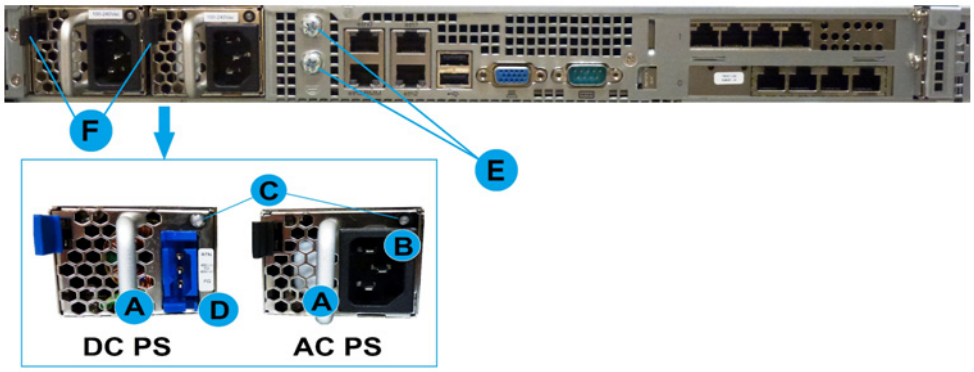


Table 13. AC and DC Power Supplies, Rear Panel

Item	Description
A	Handle to remove power supply
B	AC power IN
C	Power supply status LED
D	DC power IN
E	Ground studs (used with DC input power supply)
F	Safety Lock

Note: Ensure that the power source meets the requirements for mains DC power disconnect and overcurrent protection.

For information about power inputs, see “Section 3.8, “Power Inputs” on page 40.

Caution: Both module positions should have either a power supply module or a filler module installed whenever the product is operational. Otherwise the cooling efficiency of the remaining module is impaired. During a hot-swap operation there is a brief interval

when one position is empty. If the replacement power supply module is not immediately available, then a filler module must be installed.

Caution: If you are replacing an AC power supply, note that AC powered units are grounded via the AC power supply cord(s). If all power cords or power modules are to be removed, you must first disconnect any TNV interface cables from the unit.

Caution: If only one module is installed, it must be in the left-side slot and a power supply filer panel must be installed in the right slot for proper system cooling.

4.8.1 Removing the Power Supply

Caution: If you are removing an AC power supply, note that AC powered units are grounded via the AC power supply cord(s). If all power cords or power modules are to be removed, you must first disconnect any TNV interface cables from the unit.

Procedure

1. If you are removing:
   - — An AC power supply and you have either one AC power supply module, or you have two power supply modules but one of them does not have a power lead connected, remove any TNV interface cables from the unit.
   - — A DC power supply, continue with Step 2.
2. If you do not have a second, redundant power supply, power down the server system and unplug all peripheral devices.
3. Disconnect the appropriate power cable.
4. Press and hold the safety lock to the right to disengage the power supply.

Figure 25. Releasing Power Supply

5. Grasp the handle and pull the power supply from the chassis.

Figure 26. Removing Power Supply

4.8.2 Installing the Power Supply

Caution: If you are installing an AC power supply, note that AC powered units are grounded via the AC power supply cord(s). If all power cords or power modules are to be removed, you must first disconnect any TNV interface cables from the unit.

Procedure

1. If you are installing:
   - — An AC power supply and you have either one AC power supply module, or you have two power supply modules but one of them does not have a power lead connected, remove any TNV interface cables from the unit.
   - — A DC power supply, continue with Step 2.
2. Make sure the safety lock is pressed toward the left while sliding the module into the power supply cage.

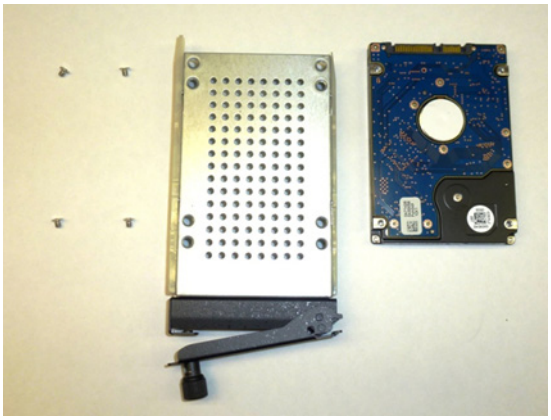
Note: Verify that the power source meets the requirements for mains DC power disconnect and overcurrent protection.

4.9 Removing and Installing a Hard Disk Drive (HDD)

4.9.1 Removing the Hard Disk Drive

1. Remove the Front Bezel following - refer to Section 4.3.1, “Removing the Front Bezel” on page 52.
2. Undo the carrier retaining screw and pull the retractor handle to remove the HDD carrier from the chassis.
3. Place the carrier on a grounded ESD mat.
4. Unscrew the four Phillips head screws from the carrier.
5. Remove the hard drive from the carrier.

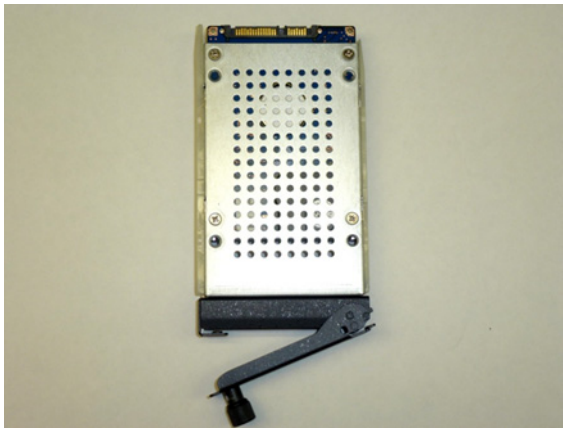
Figure 27. Removing the Hard Disk Drive



4.9.2 Installing the New Hard Disk Drive

1. Place the equipment on a grounded ESD mat.
2. Align the four screw holes of the hard drive into the carrier from below. The electrical connector of the hard drive must extend beyond the edge of the carrier.
3. Replace the four Phillips-head screws securely into the hard drive. The figure below shows the location of the screws and electrical connector.

Figure 28. Installing a New Hard Disk Drive



4. Insert the new hard disk drive as shown below. Carefully align the hard drive guides.
5. Close the extractor handle and tighten the retaining screw.

6. Replace the Front Bezel - refer to Section 4.3.2, “Re-Installing the Front Bezel” on page 53.

Figure 29. Inserting Hard Disk Drive

4.10 Preparing Dialogic® DSI SS7 Network Interface Boards for Installation

The SS7G41is available with either zero or one signaling boards installed. The types of signaling boards that are installed depends on the model number.

The procedures in Section 4.10.1 to Section 4.10.2 describe how to prepare to install new boards. The general description can also be applied to the replacement of a failed board.

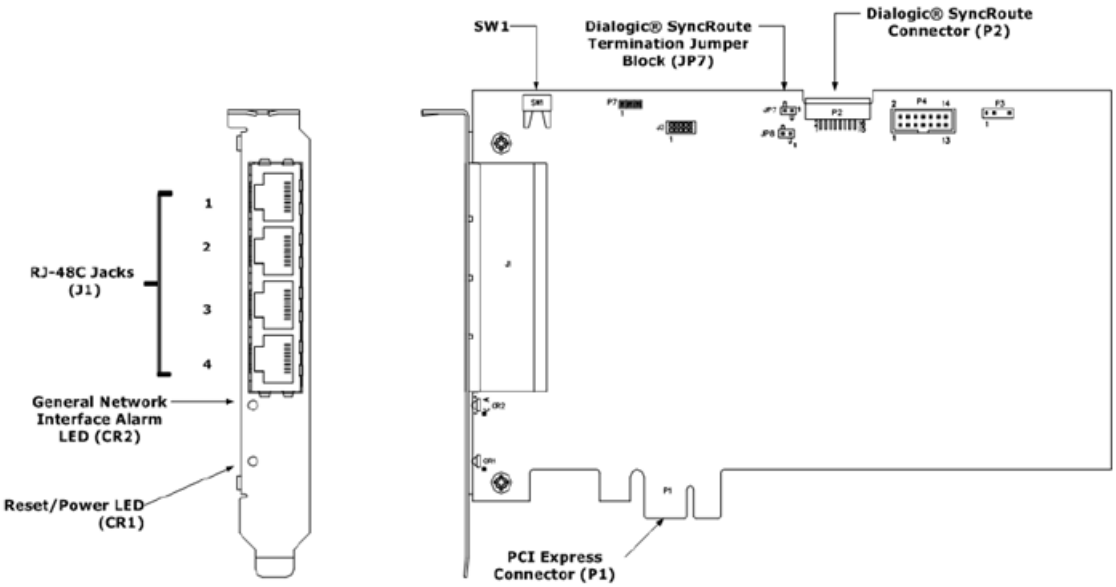
4.10.1 Preparing Dialogic® DSI SS7LDH4 Network Interface Boards for Installation

Use Table 14 to determine the position and configuration of Dialogic® DSI SS7LDH4 Network Interface Boards, and to prepare the boards for installation.

Table 14. SS7LDH4 Network Interface Board Positions and Configurations

Board Position	SW1 ADDR Setting
0	0
1	1

Figure 30. Dialogic® DSI SS7LDH4 Network Interface Board Layout

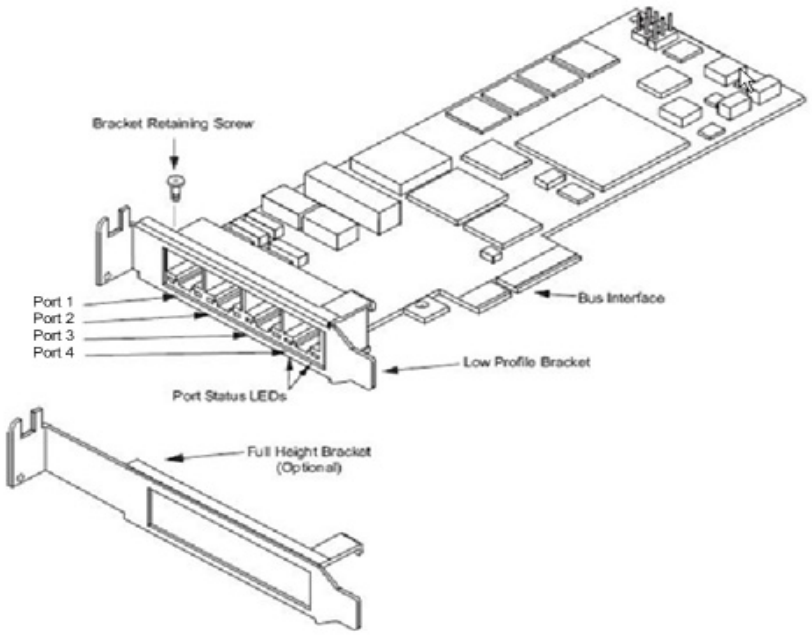


Procedure

Prepare an SS7LDH4 Network Interface Board for installation as follows:

4.10.2 Preparing Dialogic® DSI SS7MDL4 Network Interface Boards for Installation

Figure 31. Dialogic® DSI SS7MDL4 Network Interface Board Layout



Procedure

Prepare an SS7MDL4 Network Interface Board for installation as follows:

1. Unscrew and replace the Low Profile mounting bracket with the Full Height Bracket (included in the board kit).

4.10.3 Installing or Replacing a Dialogic® DSI SS7 Network Interface Board

Essential Safety: Before You Begin

1. Read the warnings and cautions in Chapter 1.
2. Turn off all peripheral devices connected to the server.
3. Turn off the server.
4. Label and disconnect all peripheral cables and all telecommunication lines connected to connectors or ports on the back of the product. Follow the instructions in Section 4.11, “Replacing a PCIe Board” on page 66 to add or remove the DSI SS7 Network Interface board.
5. Disconnect the power cord.

Procedure

Install/replace an SS7 Network Interface Board as follows:

1. Verify that, in each case, the SS7 Network Interface Board to be fitted is correctly configured and prepared.
2. Ensure that you have followed the safety instructions set out in Essential Safety: Before You Begin, above.
3. Remove the top cover. See Section 3.5.2, “Server Components” on page 35.

4.11 Replacing a PCIe Board

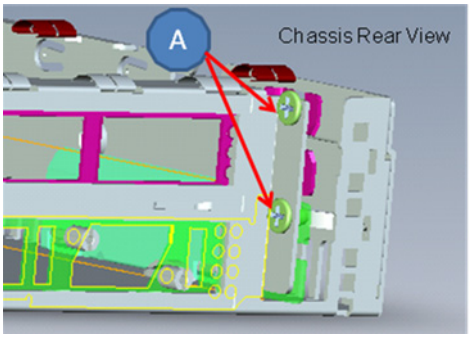
This section describes how to replace a PCIe Board including the following:

- Removing PCI Support Brackets and PCI Filler Plates
- Install PCIe Board(s) into Chassis
- Reinstall and Adjust the PCI Support Bracket
- Install the Chassis Top Cover

4.11.1 Removing PCI Support Brackets and PCI Filler Plates

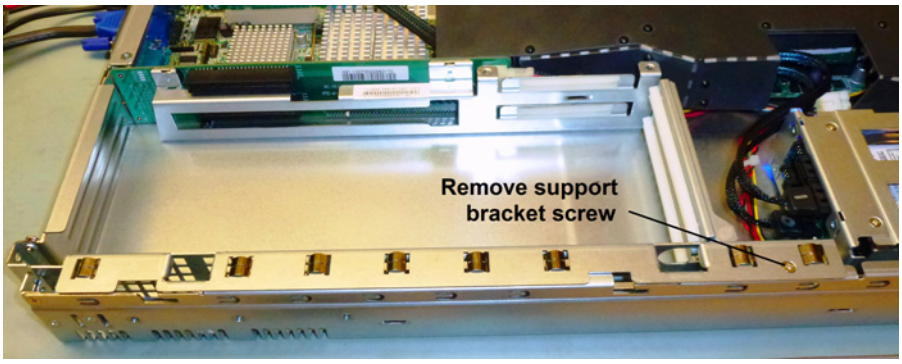
1. Locate the two screws on the outside rear of the chassis (“A” in the figure below) that secure the PCI faceplates to the chassis. Unscrew both of them.

Figure 32. PCI Faceplate Retention Screw Locations



2. Unscrew the PCI Support Bracket Screw and save it.

Figure 33. PCI Support Bracket



3. Slide the bracket towards the front of the chassis until it stops, approximately ½".
4. Lift the bracket up and out of the chassis.

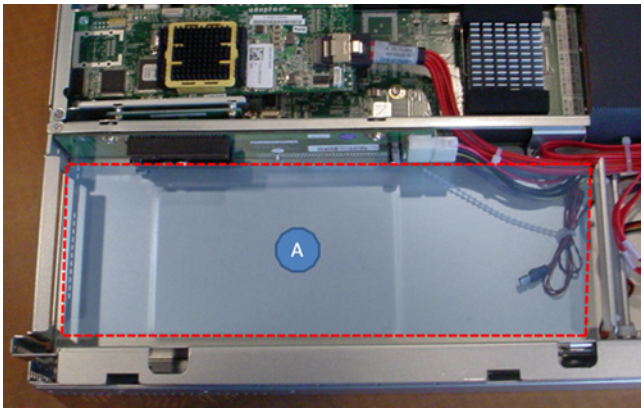
Figure 34. PCI Support Bracket

5. Remove any PCI filler plates or PCIe boards as required.

4.11.2 Installing the PCIe Board(s) into the Chassis

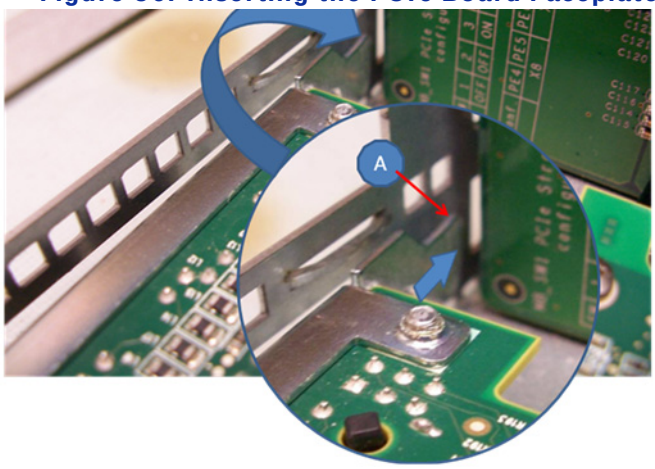
1. PCIe boards are to be installed into the chassis area "A" as shown in the figure below. When fitting a single Dialogic® DSI SS7 Network Interface Board it must be fitted in the bottom slot (slot 0). When fitting a single SS7G41NIC it must be fitted in the top slot (slot 1).

Figure 35. PCIe Board Installation Area



2. Lower the first board into the chassis, slipping one end of its faceplate into the opening at the chassis back panel sheet metal ("A" in the figure below).

Figure 36. Inserting the PCIe Board Faceplate into the Chassis Slot



3. Align the board's PCIe connector notch ("B" in Figure 38) with the mating connector key on the chassis PCI riser assembly ("A" in the figure below) then press the PCIe board fully into the PCI riser connector. When properly installed, the mating of the board and riser connectors should look like that shown in Figure 39.

Caution: Press the PCIe board straight into the PCI riser connector. Tipping the board while installing may cause damage to the PCIe board or riser assembly.

Figure 37. PCI Riser Connectors and Keying Features

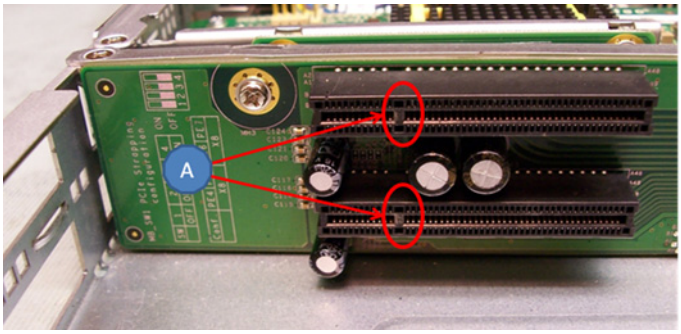


Figure 38. PCIe Board Positioned for Install

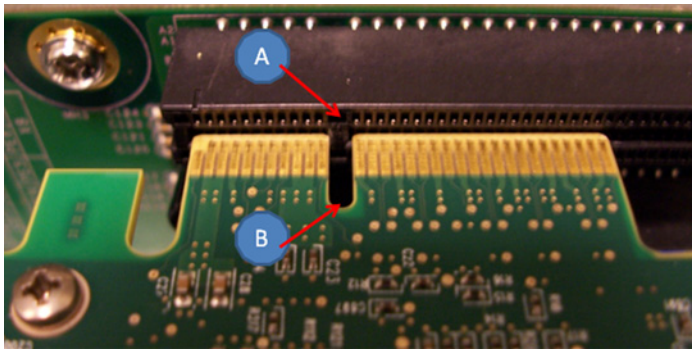
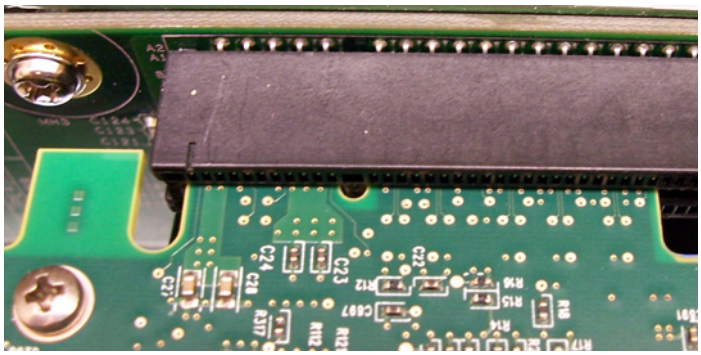


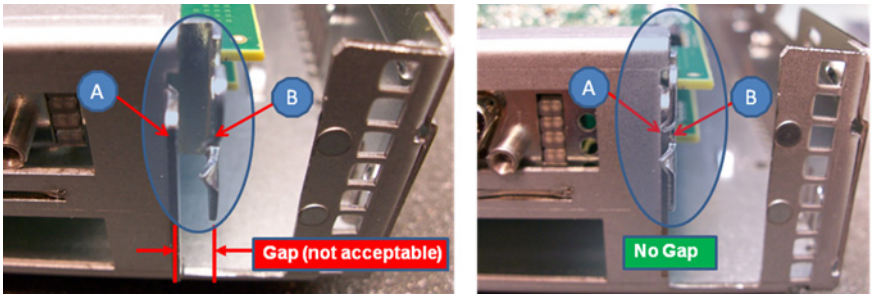
Figure 39. PCIe Board Properly Installed into PCI Riser Connector



Caution: Make sure that the PCIe Board is fully seated in the riser connector and that the board's faceplate ("B" in Figure 41) is contacting the chassis rear panel ("A") with no gap. If there is a gap between the faceplate and the rear panel, then the board may not be fully seated in the PCI riser connector or the board is not perpendicular to the riser

assembly. An improperly seated PCIe board may prevent the board from functioning and may cause problems when installing the PCI Support Bracket.

Figure 40. PCIe Board Faceplate Contacting Chassis

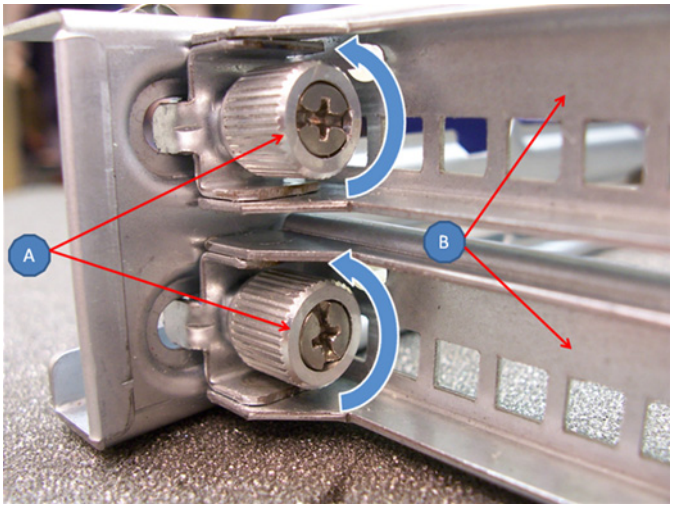


4.11.3 Reinstalling and Adjusting the PCI Support Bracket

The PCI Support Bracket (removed in an earlier step) secures up to two PCIe Boards in the chassis. There are two adjustable card guides that are part of the PCI Support Bracket assembly. Both card guides should be adjusted to the same dimensions. To adjust the card guides, follow the steps below.

1. Loosen the two knurled thumbscrews (“A” in the figure below) just enough so that the card guide (“B”) can slide along the length of the PCI Support Bracket.

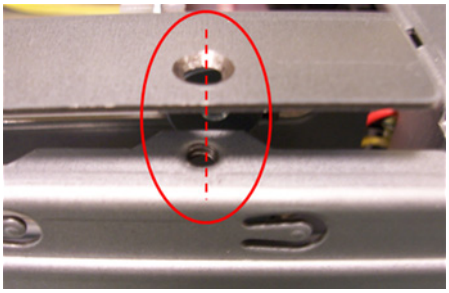
Figure 41. PCI Card Guides and Adjustment Screws



2. Move the card guides all the way to their maximum open position (Figure 41 shows the guides in their maximum open position).
3. Lower the PCI Support Bracket into the chassis keeping the bracket in the most-forward position possible (that is, towards the front of the chassis) and against the side of the chassis so that the card guides clear the PCIe board(s) as the bracket is being lowered.

   Note: It may be necessary to push any disk drive cables that interfere with the PCI Support Bracket temporarily out of the way.
4. Continue lowering the bracket until it bottoms against the chassis.
5. With the bracket fully lowered into the chassis, slowly slide the bracket towards the rear of the chassis until it stops. The screw holes in the PCI Support Bracket and the chassis should line up as shown below.

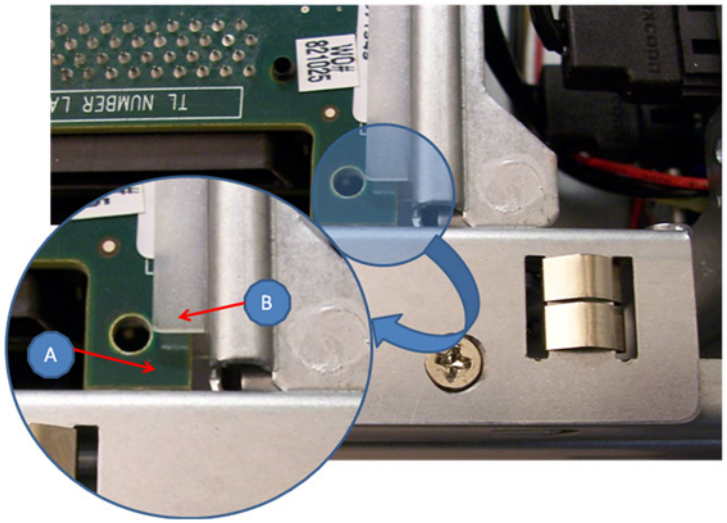
Figure 42. PCI Support Bracket and Chassis Hole Alignment (bracket lifted for clarity)



6. Reinstall the PCI Support Bracket screw that was removed earlier
7. With one hand, slide the card guides towards the back of the chassis and the PCIe boards, and with the other hand move the PCIe boards slightly up or down so that the card guides completely capture and support the PCIe Boards.

Caution: It is important to make sure that each of the two card guides ("B" in the figure below) completely engage and secure the boards ("A").

Figure 43. PCIe Board Engaged with Card Guide



8. While still applying pressure on the card guide against the PCIe Board, tighten the knurled thumbscrew on one card guide, then repeat for the other card guide. ("A" in Figure 41).
9. From the outside rear of the chassis, secure the newly installed PCI card faceplate to the chassis using the screw saved in an earlier step
10. Refit the chassis cover - refer to "Installing the Chassis Cover" on page 54.

Caution: The knurled thumbscrews should be tightened using a Phillips screwdriver, and tightened securely enough so that there is no possibility of loosening during shipping and handling.

Note: Even if only one PCIe Board is to be installed in the chassis, both card guides should be adjusted as if both Boards were installed.

4.12 Back-up Battery - Replacement

A lithium battery on the server board provides power to maintain date and time settings in the real time clock (RTC) for up to ten years in the absence of main AC or DC power. When the battery starts to weaken, it loses voltage, and the date and time settings may be lost or corrupted.

The battery can be replaced by one labeled with manufacturer and part number information that is identical to that marked on the original battery. Alternatively, contact your customer service representative for advice on approved equivalent devices.

Essential Safety: Before You Begin

1. Read the warnings and cautions in Chapter 1.
2. Turn off all peripheral devices connected to the server.
3. Turn off the server.
4. Disconnect the power cord.
5. Label and disconnect all peripheral cables and all telecommunication lines connected to connectors or ports on the back of the product.

WARNING

Danger of explosion if battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to the manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

4.12.1 Replacing the Back-up Battery

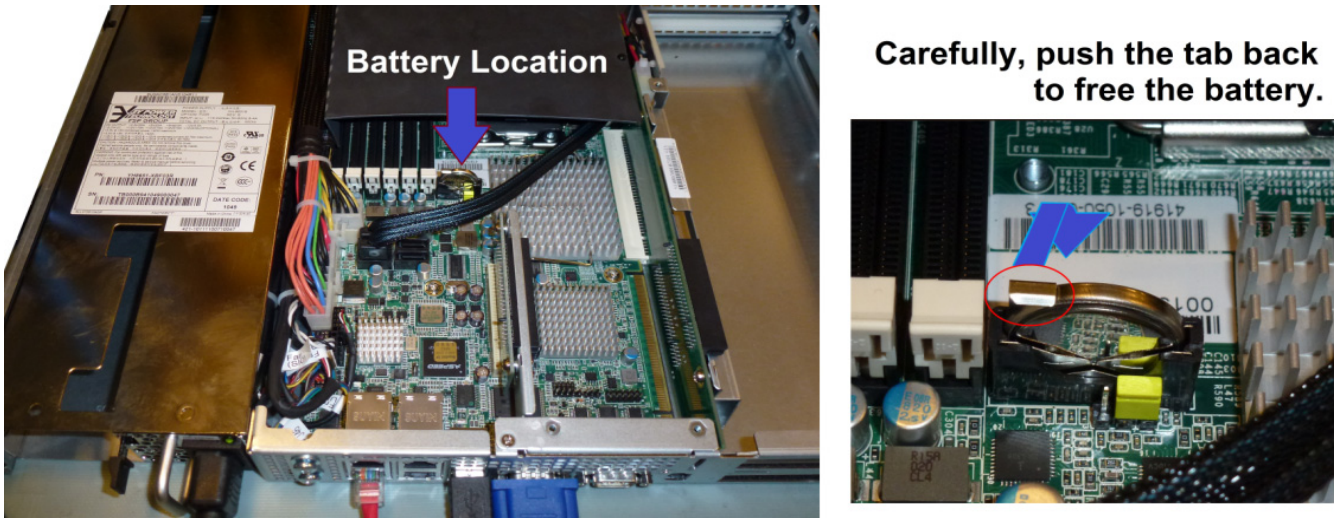
To replace the back-up battery, follow this procedure:

1. Observe the information and warnings detailed in Essential Safety: Before You Begin, above, and in Chapter 1.
2. Power down the server system and unplug all peripheral devices and the power cords.
3. Remove the top cover. For instructions, see “Removing the Chassis Cover” on page 53.
4. Locate the battery on the server board. See Figure 44 below.
5. Gently press the battery retainer tab clear of the battery.

Caution:Do not bend the tab further then needed to clear the battery)

6. Remove the battery from its socket.

Figure 44. Replacing the Back-up Battery



7. Dispose of the old battery according to local ordinance.
8. Remove the new battery from its package.
9. Being careful to observe the correct polarity, gently push the retainer tab away and insert the battery into the battery socket.
10. Replace the top cover. See “Removing the Chassis Cover” on page 53.
11. Follow the steps below depending if the unit is AC or DC power:
    - — AC units, reconnect the power cord(s)
    - — DC units, reconnect the ground to the server.
12. Reconnect all peripheral devices.
13. Re-set the RTC via the CNTDS command. For more information about the CNTDS command, refer to the appropriate <Operating Mode> User Manual. See “Related Information” on page 27 which lists the various user manuals.